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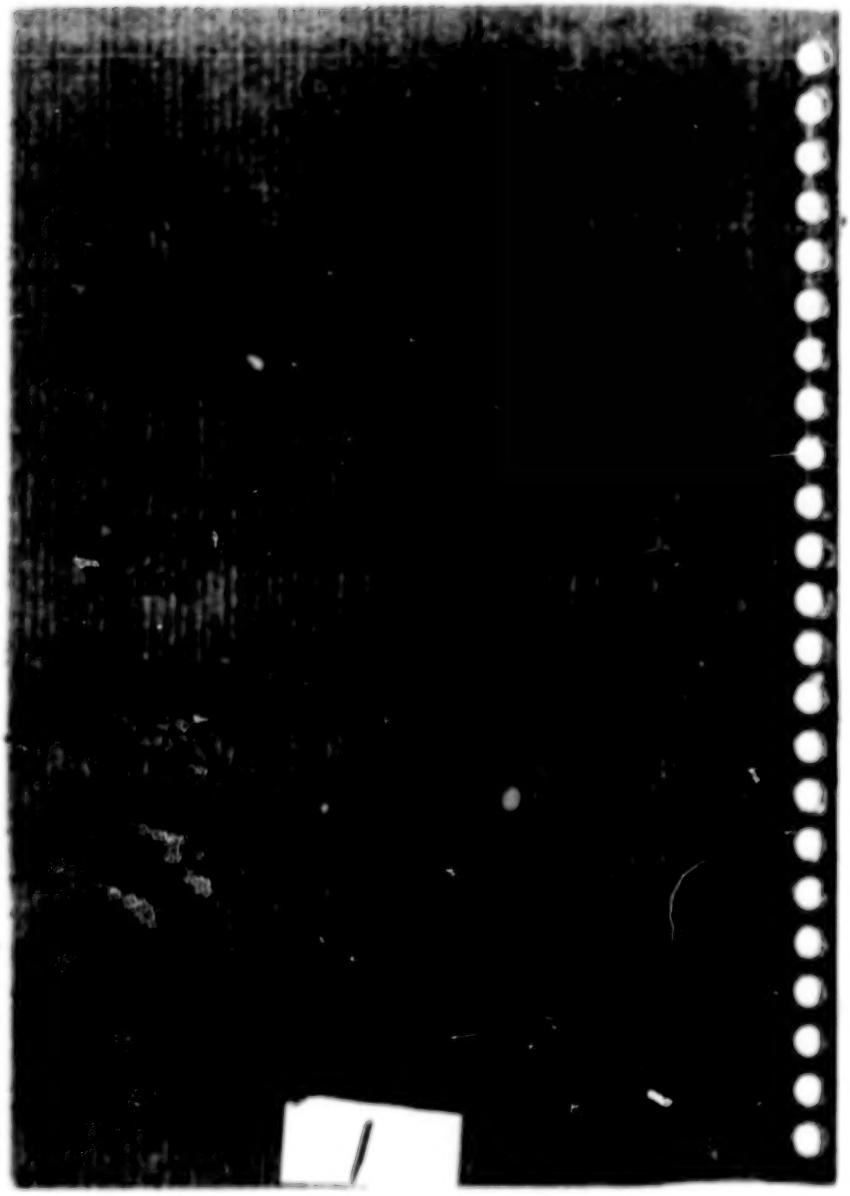


MAR 2 0 2003

BE SAFE!

TAKE NO UNNECESSARY RISKS!

- **IDENTIFY HAZARDS**
- **ASSESS HAZARDS**
- **DEVELOP CONTROLS**
- **MITIGATE HAZARDS**
- **RE-EVALUATE**

HAVE A REASON FOR EVERYTHING YOU DO!

AND

DOCUMENT – DOCUMENT – DOCUMENT

REMEMBER

*******"SITUATION CHECK"*******

EVERYONE HAS THE RIGHT AND OBLIGATION TO PAUSE OPERATIONS UNTIL SAFETY CONCERNS ARE ADDRESSED.

2

WYOMING BLM FIRE OPERATIONS CODE FOR SAFETY

ALL FIRE CREW MEMBERS ARE PERSONALLY RESPONCIBLE FOR:

- PERSONAL WELLNESS AND PHYSICAL FITTNESS
- PRE-FIRE SAFETY CHECKS
- ENGINE READINESS AND SAFETY
- I.A. SIZE-UP
- TAILGATE SAFETY BRIEFING *

* On every fire, after the fire has been located and access has been made, Firefighters will meet at the Initial Attack ICP to brief the following topics:

- **Chain of Command** – who is in charge?
- **Fireline access** – how do we get there safely?
- **Basic tactics and objectives** – what is the safest most effective way to contain this fire?
- **Tool Mix** – tools needed for chosen task?
- **Radio Communications** – radio frequencies to be used?
- **Establish LACES.**
- **Questions or Concerns?**

REMEMBER!
USE "SITUATIONAL CHECK" WHEN YOU HAVE A DOUBT ABOUT SAFETY.

10 STANDARD FIRE ORDERS

Fight fire aggressively but provide for safety first.

Initiate all action based on current and expected fire behavior.

Recognize current weather conditions and obtain forecasts.

Ensure that instructions are given and understood.

Obtain current information on fire status.

Remain in communication with crewmembers, your supervisor, and adjoining forces.

Determine safety zones and escape routes.

Establish lookouts in potentially hazardous situations.

Retain control at all times.

Stay alert, keep calm, think clearly, and act decisively.

18 WATCHOUT SITUATIONS

- Fire not scouted and sized up.
- In country not seen in daylight.
- Safety zones and escape routes not identified.
- Unfamiliar with weather and local factors influencing fire behavior.
- Uninformed on strategy, tactics, and hazards.
- Instructions and assignments not clear.
- No communication link between crewmembers and supervisor.
- Constructing line without a safe anchor point.
- Building line downhill with fire below.
- Attempting frontal assault on fire.
- Unburned fuel between you and the fire.
- Cannot see main fire, not in contact with someone who can.
- On a hillside where rolling material can ignite fuel below.
- Weather gets hotter and drier.
- Wind increases and/or changes direction.
- Getting frequent spot fires across line.
- Terrain and fuels make escape to safety zones difficult.
- Feel like taking a nap near fireline.

LACES Checklist

Lookout(s)

- Experienced/ Competent/ Trusted.
- Enough lookouts at good vantage points.
- Knowledge of crew locations.
- Knowledge of escape routes and safety locations.
- Map/ Weather Kit/ Watch/ IAP/ Batteries.

Awareness

- Who is in charge?
- Briefed on local weather factors and events.
- Knowledge of current and expected fire behavior.
- Knowledge of fire location.
- Time/ Tag fire movement with suppression tactics.
- Set disengagement points – plan for the worst, hope for the best.

Communications

- Radio frequencies confirmed.
- Backup and check-ins established.
- Update on any situation change.
- Sound alarm early – better to pull out early than too late.

Escape Route(s)

- More than one escape route established.
- Scouted – aside, rocks, slope, and vegetation kept in mind.
- Timed – slowest person, fatigue, and temperature factors.
- Marked – flagged, (escape route and time green flagging), for day and night.

Safety Zone(s)

- Survivable without a shelter.
- Natural – clean burn, rock area, and water.
- Man-made – constructed sites, clearcuts, and roads.
- Vehicles for escape.
- Scouted for size and hazards.
- Close enough considering escape time.
- Located to avoid hazardous terrain features.
- Upslope – more heat impact = larger safety zone.
- Downwind – more heat impact = larger safety zone.
- Heavy Fuels – more heat impact = larger safety zone.

LACES must be established and known to ALL firefighters BEFORE needed.

"All men are liable to error, and most men are, in many points, by passion or interest, under temptation to it." John Locke, Essay Concerning Human Understanding, 1690

6

Safety Zone Guidelines

- Avoid locations that are downwind from the fire.
- Avoid locations that are in chimneys, saddles, or narrow canyons.
- Avoid locations that require a steep uphill escape route (greater than 50%).
- Take advantage of heat barriers such as lee side of ridges, large rocks, or solid structures.
- Burn out safety zones prior to flame front approach.
- For radiant heat only, the distance separation between the firefighter and the flames must be at least 4 times the maximum flame height. This distance must be maintained on all sides, if the fire has ability to burn completely around the safety zone. **Convective heat from wind and/or terrain influences will increase this distance requirement. The calculations in the table below assume no slope and no wind.**

Flame Height	Distance Separation (firefighters to flame)	Area in Acres
10 ft.	40 ft.	1/10 acre
20 ft.	80 ft.	1/2 acre
50 ft.	200 ft.	3 acres
75 ft.	300 ft.	7 acres
100 ft.	400 ft.	12 acres
200 ft.	800 ft.	50 acres

Distance Separation is the radius from the center of the safety zone to the nearest fuels. When fuels are present that will allow the fire to burn on all sides of the safety zone this distance must be doubled in order to maintain effective separation in front, to the sides, and behind the firefighters.

Area in Acres is calculated to allow for distance separation on all side for a three-person engine crew. One acre is approximately the size of a football field or exactly 208 feet x 208 feet.

Look Up, Down & Around

(Pay special attention to indicators in bold print)

Fire Environment Factors	Indicators
Fuel Characteristics Assess	**Continuous fire fuels** **Heavy loading and dead and down** **Ladder fuels** **Tight crown spacing (< 20 ft.)** **Special Conditions** • **Firebrand sources** • **Numerous snags** • **Preheated canopy** • **Frost and Bug kill** • **Unusual fine fuels** • **High dead to live ratio**
Fuel Moisture Feel and Measure	**Low RH (< 25%)** **Low 10 hr. Fuel Moisture Content (< 6%)** **Drought conditions** **Seasonal drying**
Fuel Temperature Feel and Measure	**High temps (> 85F)** **High % of fuels with direct sunlight** **Aspect fuel temperature increasing**
Terrain Scout	**Steep slopes (> 50%)** **Chutes – Chimneys** **Box canyons** **Saddles** **Narrow canyons**

Look Up, Down & Around

(Pay special attention to indicators in bold print)

Fire Environment Factors	Indicators
Wind Observe	**Surface winds above 10 mph** Lenticular clouds High, fast-moving clouds Approaching cold fronts Cumulonimbus development Sudden calm **Battling or shifting winds**
Stability Observe	Good visability Gusty winds and dust devils Cumulus clouds Castellatus clouds in the AM Smoke rising straight up Inversion beginning to lift Thermal belt
Fire Behavior Watch	Leaning column Sheared column **Well-developed column** Changing column **Trees torching** Smoldering fires picking up Small firewhirls beginning **Frequent spot fires**

Tactical Watch Outs

Position

1. Building fireline downhill.
2. Building underslung or mid-slope fireline.
3. Building indirect fireline, or unburned fuels remains between you and the fire.
4. Attempting frontal assault on the fire, or you are delivered by aircraft to the top of the fire.
5. Terrain and/or fuels make escape to safety zones difficult.

Situation

6. Small fire transitioning to a larger fire or an isolated area of a large fire.
7. Suppression resources are fatigued or inadequate.
8. Assignments depend on aircraft support.
9. Night-time operations
10. Wildland-Urban interface operations.

Each of these Watch Outs require that you implement appropriate hazard control(s).

Downhill Checklist

Downhill fireline construction is hazardous in steep terrain, fast-burning fuels, or rapidly changing weather. Downhill fireline construction should not be attempted unless there are no tactical alternatives. When building downhill fireline, the following is required:

1. Crew supervisor(s) and fireline overhead will discuss assignments prior to committing crew(s). Responsible overhead individual will stay with the job until completed (TFLD or ICT4 qualified or better).
2. Decision will be made after proposed fireline has been scouted by supervisor(s) of involved crew(s).
3. L.C.E.S. will be coordinated for all personnel involved.
   - Crew supervisor(s) is in direct contact with lookout who can see the fireline.
   - Communication is established between all crews.
   - Rapid access to safety zone(s) in case fire crosses below crews.
4. Direct attack will be used whenever possible; if not possible, the fireline should be completed between anchor points before firing out.
5. Fireline will not lie in or adjacent to a chute or chimney.
6. Starting point will be anchored for crew(s) building fireline down from top.
7. Bottom of the fire will be monitored; if the potential exists for the fire to spread, action will be taken to secure the fire edge.

//

Common Denominators of Fire Behavior on Tragedy Fires

There are four maj common denominators of fire behavior on fatal a near-fatal fires. Such fires often occur:

1. On relatively small fires or deceptively quie areas of large fires.
2. In relatively light fuels, such as grass, herbs, and light brush.
3. When there is an unexpected shift in wind direction and speed.
4. When fire responds to topographic conditions and runs uphill.

Alignment of topography and wind during the burning period should always be considered a trigger point to re-evaluate strategy and tactics.

Sawyer's Field Check Lists

Bucking Procedures

1. Estimate Reactions
2. Determine Bucking Locations
3. Look for Widow-makers
4. Look for Spring Poles
5. Determine Off-Side
6. Clear Work Area and Escape Plan
7. Starting, Stance and Handling
8. Off-Side Cut
9. Wait> Kerf!
10. Reduce Remaining Wood
11. Cutting Sequences
    - Bottom Bind
    - Top Bind
    - End Bind
    - Side Bind

Felling Procedure

1. Observe Top, (widow-makers, heavy branches, wind)
2. Establish Lay
3. Check for Snags
4. Swamp Out Base
5. Size-Up, (trees, sounding)
6. Determine Escape Route
7. Walk Out Lay
8. Re-Examine Escape Route
9. Face Tree
10. Warning
11. Backcut
12. Escape Stump
13. Analyze Operation

SAW SAFETY

Size Up is the first step in a successful falling operation.

Awareness of obstacles, hazards, and other workers is crucial.

Work environment changes require increased precautions.

Saw management & maintenance done correctly saves time and effort.

Ability to perform at peak efficiency prevents injuries.

Falling direction & tactics must be implemented on every tree.

Escape Routes are a requirement for every tree.

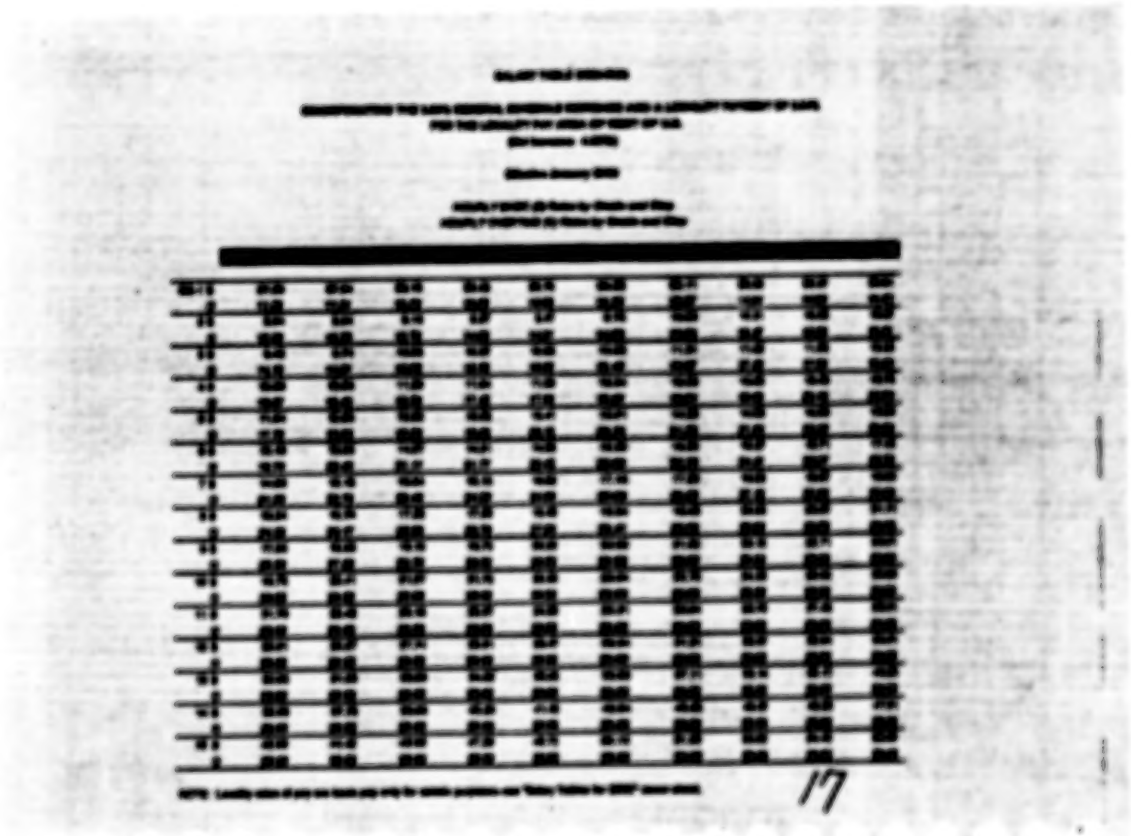
Talk with other crewmembers about strategy and hazards.

You are responsible for a safe day.

Fuels Management Crew
Flagstaff Fire Department
Flagstaff, AZ

NOTES

2003 PAYROLL SCHEDULE



Cathy's Corner

- For commercial airline flights you must include either a "passenger receipt" or if using ticketless travel, submit a copy of your travel itinerary. NO EXCEPTIONS!
- Only submit original, itemized receipts. This is not the itemized receipt that you sign.
- Indicate your mode of transportation. POV (private vehicle), GOV (government vehicle), GOA (government aircraft), or commercial airline information. If you are using your POV, please let Cathy know in advance. A cost comparison must be done to receive full reimbursement on the mileage.
- Indicate your travel purpose: meeting, training, detail, etc.
- Separate the room tax from the basic room rate and enter in the "other" column on your voucher and in the remaining information section on the front. (Box 18).
- Flag lodging if it exceeds the allowed lodging rate. A letter authorizing the higher rate must be included with your voucher to receive full reimbursement.
- Day of Departure: claim ¾ of the per diem of the city you are traveling to.
- Day of Return: claim ¾ of the per diem of the city you have just travel from.
- Use either your issued telephone card or a "talk and text" card. Do not charge phone calls to the hotel room. Do not claim phone calls on your voucher.
- When changing to "7/7/05," make certain that the 7's look like 7's and the 7's look like 7's.
- SIGN YOUR TRAVEL VOUCHERS!!!!
- And of course, if you have any questions, contact Cathy.

18

PER DIEM RATES

STATE	CITY	MAX. LODGING	M&IE
Arizona	Grand Canyon	109	42
California	Barstow	77	30
	Death Valley	107	42
Colorado	Grand Junction	77	30
	Gunnison City	77	30
	Aspen	99	42
	Telluride (5/1 - 9/30)	89	34
	Telluride (10/1 - 4/14)	81	30
Idaho	Challis	77	30
	Mackay	77	30
	Salmon	77	30
Montana	Miles City	77	30
	Wibaux	77	30
	Yellowstone (5/1 - 9/30)	91	34
	Yellowstone (10/1 - 4/30)	77	30
Nevada	Austin	77	30
	Battle Mountain	77	30
	Elko	77	30
	Ely	77	30
	Las Vegas	77	30
	Reno	77	30
	Winnemucca	77	30
Oregon	Burns	77	30
	La Grande	77	30
	Redmond	77	30
Utah	Provo	89	34
	Salt Lake City	77	30
	Vernal City (5/1 - 9/30)	77	30
	Vernal City (10/1 - 4/30)	77	30
Washington	Ephrata	89	34
Wyoming	Casper	77	30
	Cheyenne	77	30
	Jackson	77	30
	Rock Springs	77	30
	Worland	77	30

PER DIEM RATES

STATE	CITY	MAX LODGING	M&IE

STANDARD DEDUCTION FOR MEALS (CONUS)

The applicable M&IE rate for CONUS locations shall be reduced by the dollar amount shown in the following table when meals are furnished to the employee without charge or at a nominal cost by the Federal Government.

	M&IE RATES				
	$30	$34	$38	$42	$46
Breakfast	6	7	8	9	9
Lunch	6	7	8	9	11
Dinner	16	18	20	22	24
Incidentals	2	2	2	2	2

Typical Program Element Usage with the Wildland Fire Industrial Sites

2010	
Preparedness	**AF – Outreach & Customer Svc to Reduce Threats to Public & Property** **HT – Fire Preparedness** **HU – Wildfire Suppression (Base 8) **** **JL – Fire Rehab Treatments Applied (Base 8) **** **JM – Fuels Treatments Implement (Base 8) **** **JW – Fuels Treatment Inside WUI (Incl YYYY) ****
2021	
Suppression Operations	**AF – Outreach & Customer Svc to Reduce Threats to Public & Property** **HT – Fire Preparedness** **HU – Wildfire Suppression (Base 8) **** **JL – Fire Rehab Treatments Applied (Base 8) ****
2022	
Emergency Rehabilitation	**JL – Fire Rehab Treatments Applied ****
2023	
Hazardous Fuels Reduction	**AF – Outreach & Customer Svc to Reduce Threats to Public & Property **** **HU – Wildfire Suppression (Base 8) **** **JL – Fire Rehab Treatments Applied (Base 8) **** **JM – Fuels Treatments Implement (Base 8) **** **JW – Fuels Treatment Inside WUI (Incl YYYY) ****
2024	
Wildland Urban Interface Fuels	**HU – Wildfire Suppression (Base 8) **** **JL – Fire Rehab Treatments Applied (Base 8) **** **JW – Fuels Treatment Inside WUI (Incl YYYY) ****
2030	
Fire Reimbursable Use 2010 for Program elements **	
2060	
Rural Fire Assistance	**AF – Outreach & Customer Svc to Reduce Threats to Public & Property**

**** Project Number Mandatory**

COMMONLY USED BUDGET OBJECT CLASS CODES

Object Class Code	Description
	TRAVEL
21	11A Advisory Boards
21	11C Commercial Transportation
21	11D Per Diem Allowances
21	11E Privately Owned Vehicle (POV)
21	11F Mileage
21	11G Car Rental
21	11H Taxi
21	11I Fleet Air Vehicle
	TRAINING
25	12A Commercial Training Services
25	12B Tuition
25	12C Meetings/Conferences Fees
	SMALL PURCHASE
25	13A Books
25	13B Subscriptions
25	13C Publishing Supplies & Printing/Binding
25	13D Equipment Clothing
25	13E Food and Beverages
25	13F Equipment Supplies & Materials
25	13G Equipment Supplies & Parts
25	13H Fuel & Lubricants, Gasoline, Oils
25	13I Fuel & Vehicle Oils
25	13J Supplies & Materials - OSA
25	13K Office Supplies & Materials
25	13L Office Communications
25	13M Maintenance of Records
	REPAIR & MAINTENANCE
25	14A Operating, Maintenance & Repairs - Buildings
25	14B Repairs & Maintenance - Vehicle
25	14C Repairs & Maintenance - Equipment
	OTHER
25	15A Utilities
25	15B Rent & Leases

TYPICAL HOURS CODES

Code	Description
010	Regular Time
020	Annual Leave
030	Sick Leave
040	Comp Time Earned
041	Comp Time Used
050	Holiday - Not Worked
051	Holiday - Worked (Not 8 hours only)
060	Administrative Leave - Other - Used
061	Administrative Leave - Court - Used
070	Funeral Pay
071	Leave Without Pay - Used
110	Overtime - Regular
140	Standby Premium - Worked
150	OVERTIME - HOLIDAY (other than 8 hours on 051)
151	OVERTIME - Standby
230	Credit Hours - Earned
231	Credit Hours - Used
300	Time Off Award
410	Leave Share - Used
710	Family Friendly Leave - Illness - Used

GOVERNMENT MASTERCARD TIPS

There are 2 components to the Bank of America MasterCard and the limits on each:

1. Travel Only Authority - $4,000 individually billed limit + $2,500 centrally billed limit for a total of $6,500 monthly travel credit limit.
2. Travel plus Small Purchase Authority - $20,000 purchase limit + $10,000 individually billed travel limit + $1,000 centrally billed travel limit for a total of $31,000 monthly credit limit.
(NOTE: there is a $2,500.00 single purchase limit)

SMALL PURCHASES

All small purchases are centrally billed and paid for directly by the government. When making purchases, log and file receipts in the bankcard notebook.

- Don't forget you single purchase limits of $2,500.00.

TRAVEL

Those with "travel only" authority may not use their card to make small purchases.

It is mandatory that you use your Bank of America card for all government travel.

Your card may be used to obtain cash advances, but limited to 70% of your estimated travel expenses, which at the standard CONUS rate equals $210.00 for 7 days of travel. Claim ATM charges plus a 1.9% fee charged by Bank of America on your travel voucher.

Airline tickets, rental cars, and gas for rental cars are centrally billed to the government and will not be reimbursed to the employee. Taxi, bus, and shuttle fares are also centrally billed if your MasterCard is used. If you pay cash for your transportation, note on your travel voucher that these items were paid with cash to receive reimbursement.

- NOTE: Tax exempt number is shown on the front of all bankcards.

RETAIN ALL RECEIPTS TO BE SUBMITTED MONTHLY WITH YOUR STATEMENTS. THIS IS MANDATORY!!!

25

PROCEDURE FOR RECONCILING BANKCARD STATEMENT

- Monthly statements cut off on the 27th of each month. You have 5 calendar days to reconcile statement and submit to approving official.
- YOU are responsible for the prompt payment of your individual bankcard charges. Delinquent payment will result in loss of card privileges and possible disciplinary action. Without a bankcard you will not be able to travel for the government, which means you are therefore unable to perform your job.
- You are responsible:
  - to verify that all transactions are accurately charged.
  - to indicate cost codes and budget object class codes on all items.
- Provide a description of each transaction on the statement (*miscellaneous supplies is unacceptable*).
- Determine if any transactions need to be moved from individually billed to centrally billed of vice versa.
- Determine if a charge code needs to be corrected on any individual transactions. If any part of the charge code is incorrect, it must be changed. Note the correct charge code by the item on your statement. If not changed, all transactions for firefighters will default to their Field Office fire budget charge code.
  - I.E. WY010-2810-HT-30-1A Wasatch Field Office
- If any items need to be disputed, follow dispute procedures on statement. The dispute must be initiated within 60 days of the date of the statement.
- Sign and date the statement.
- Submit your statement and original receipts to your Immediate Supervisor to be signed and approved.
- Submit your statement to the appropriate Field Office official for processing.
- [redacted] It is in your best interest to make photocopies of your signed and dated statement and copies of your receipts to be kept in your personal records.

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VEHICLE CREDIT CARD USEAGE

GSA VEHICLES (any plate with a "G" in it):

PIN # - last 5 digits of the license plate

REPAIRS

- **Under $100 – use the vehicle credit card.**
- **Over $100 – authorization needed (have the vendor contact GSA @ 1-888-422 4344)**

DOI VEHICLES (any plate with an "I" in it):

PIN # - any 5 numbers

REAIRS

- **Use the vehicle credit card for purchases up to $100.**
- **Use a Government MasterCard that has small purchase authority for all repairs and maintenance over $100.**

REMEMBER

1. **Fill out the vehicle fuel/mileage logbook when fueling and having repairs done.**
2. **Fill out a "Motor Vehicle Accident Report – SF 91" immediately after an accident.**
3. **Drive DEFENSIVELY!!!**

Fire Assignment List Rules

1. The rules of the assignment list are a guide and may be amended at the discretion of the Fire Operations Supervisor. Since these rules cannot cover every possible situation, individual interpretations by the FMO, FOS or senior Persons may be required in some cases.
2. Fire and non-fire assignments are rotating assignments if the list is used. Firefighters who work a fire or are gone from the Field Office for more than 48 hours will return to the bottom of the list. Those gone less than 48 hours who do not work a fire will rotate with the list until their return.
3. Assignments can be non-rotating if the list is not used, such as leaving town to put on or attend training, some reports, workshops, or detail assignments.
4. The assignment list will normally be adjusted at the start of the workday, immediately after lunch, and at the end of the normal workday. Engine and hand crew assignments will also be made at these times.
5. If a firefighter is unavailable when an assignment comes up, he/she will be placed at the bottom the assignment list.

SUB-BASE RULES

6. A sub-base is a staging location for resources, and will be conducted in the same fashion as the Field Office.
7. A sub-base list starts when the first firefighters arrive, with those first to arrive being placed at the top of the list.
8. Firefighters leaving a sub-base are subject to the normal 48-hour rule. It is possible for firefighters to maintain positions on multiple lists.

HOLD

9. HOLD means that the firefighter is bypassed when assignments come up.
10. HOLD should be designated before the workday begins, preferably the night before.
11. HOLD must be approved by the firefighter's Persons or senior Persons on duty.
12. HOLD generally does not need to be explained, it is a personal choice. If holding becomes a habit, an inquiry will be made by the Fire Operations Supervisor.
13. Long-term HOLD, of longer than 14 days, must be approved by the Fire Operations Supervisor.

FY 2003 Travel Record

Month	Number No.	Location

FY 2003 Travel Record

Month	Voucher No.	Location

NOTES

Wyoming BLM State Office

PO Box 1828
5353 Yellowstone Road
Cheyenne, Wyoming 82003

[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
John Glenn	307-775-6234	307-630-5347	
[illegible]	[illegible]	[illegible]	[illegible]
Steve Eckert	307-775-6230	307-630-1371	
[illegible]	[illegible]	[illegible]	[illegible]
Delores Noltage	307-775-6237	307-631-6430	
[illegible]	[illegible]	[illegible]	[illegible]
Bob Moore	307-775-6207	307-631-6049	

[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
Patricia Widenhofer	307-775-6009		
[illegible]	[illegible]	[illegible]	[illegible]
Kermit Johnson	307-775-6000		

[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
Floyd Wilson	307-775-6003		
[illegible]	[illegible]	[illegible]	[illegible]
Carl Pippert	307-775-6006		

[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
Bob Rostov	307-775-6016		
[illegible]	[illegible]	[illegible]	[illegible]
Don Roberts	307-775-6053		
[illegible]	[illegible]	[illegible]	[illegible]
Rolf Algermissen	307-775-6049		
[illegible]	[illegible]	[illegible]	[illegible]
Sherry Lowdermilk	307-775-6349		

Wyoming BLM Telecommunications

Lander Field Office
PO Box 16
1335 Main Street
Lander, Wyoming 82520

[illegible]	[illegible]	[illegible]	[illegible]
Rachel Whitley	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Marvin Jordan	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
Mark Joker	[illegible]	[illegible]	[illegible]

Wyoming BLM Sign Shop

Rawlins Field Office
PO Box 2407
1300 Third Street
Rawlins, WY 82301

[illegible]	[illegible]	[illegible]	[illegible]
John Johansen	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]
David Wolfe	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]
Jonathan Lemieux	[illegible]		

National Interagency Fire Center

3833 Development Avenue
Boise, ID 83705

[illegible]	[illegible]	[illegible]	[illegible]
Michael Uberle	[illegible]		[illegible]
[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
Greg Jensen	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]
Corey Grant	[illegible]		

North Zone BLM Fire Operations

Worland Field Office
PO Box 119
101 South 23rd Street
Worland, WY 82401

[illegible]	[illegible]	[illegible]	[illegible]
Gary Bingham	[illegible]	[illegible]	

[illegible]	[illegible]	[illegible]	[illegible]
Chuck Russell	[illegible]	[illegible]	

[illegible]	[illegible]	[illegible]	[illegible]
LJ Brown	[illegible]		
	[illegible]		
	[illegible]		
	[illegible]		

[illegible]			
[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]
Ken Stinson	[illegible]		
[illegible]	[illegible]	[illegible]	[illegible]
Jim Wolf	[illegible]		

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Jack Mosser	[illegible]		

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3225 Doggoby Drive
Cody, Wyoming 82414

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Southern Zone BLM Fire Operations

Rawlins Field Office
PO Box 2407
1300 Third Street
Rawlins, WY 82301

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Larry Trapp	[illegible]	[illegible]	

At [illegible] Field Offices			
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Steve Reaser	[illegible]	[illegible]	

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Aaron Meyer			

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Southern Zone BLM Fire Operations

Lander Field Office
PO Box 16
1335 Main Street
Lander, WY 82520

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LANDER FIELD OFFICE			
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Southwestern Zone BLM Fire Operations

Rock Springs Field Office
280 Highway 191 North
Rock Springs, WY 82901

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Sherrill King	[redacted]	[redacted]	

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John Menke	[redacted]	[redacted]	

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Tony Trask	[redacted]		
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Thor Stephenson	[redacted]		

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Eastern Zone BLM Fire Operations

Casper Field Office
2987 Prospect Drive
Casper, WY 82604

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Rod Fields			
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Steve Hansen	47-234-1141		
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[redacted]	Casper	307-261-6971	
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Casper Interagency Dispatch Center
2987 Prospect Drive
Casper, Wyoming 82604

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307-261-7691

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Dispatch Center Quick Reference

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Boise Interagency Logistics Center – BILC	[illegible]	[illegible]
Casper Interagency Dispatch Center	[illegible]	[illegible]
Cedar City Interagency Fire Center	[illegible]	[illegible]
Central Idaho Interagency Fire Center	[illegible]	[illegible]
Central Nevada Interagency Dispatch Center	[illegible]	[illegible]
Cody Interagency Dispatch Center	[illegible]	[illegible]
Coeur d'Alene Interagency Dispatch Center	[illegible]	[illegible]
Craig Interagency Dispatch Center	[illegible]	[illegible]
Custer Interagency Dispatch Center	[illegible]	[illegible]
Durango Interagency Dispatch Center	[illegible]	[illegible]
Eastern Idaho Interagency Dispatch Center	[illegible]	[illegible]
Elko Interagency Dispatch Center	[illegible]	[illegible]
Ely Interagency Communications Center	[illegible]	[illegible]
Fort Collins Interagency Dispatch Center	[illegible]	[illegible]
Grand Junction Air Center	[illegible]	
Grand Junction Interagency Dispatch Center	[illegible]	[illegible]
Las Vegas Interagency Communications Center	[illegible]	[illegible]
Moab Interagency Fire Center	[illegible]	[illegible]
Montrose Interagency Dispatch Center	[illegible]	[illegible]
Payette National Forest Dispatch	[illegible]	[illegible]
Pueblo Interagency Dispatch Center	[illegible]	[illegible]
Richfield Interagency Fire Center	[illegible]	[illegible]
Salt Lake Interagency Dispatch Center	[illegible]	[illegible]
Sawtooth National Forest Dispatch	[illegible]	[illegible]
Sierra Front Interagency Dispatch Center	[illegible]	[illegible]
Southern Idaho Interagency Logistics Center	[illegible]	[illegible]
Southern Wyoming Interagency Dispatch Center	[illegible]	[illegible]
Teton Interagency Dispatch Center	[illegible]	[illegible]
Uintah Basin Interagency Fire Center	[illegible]	[illegible]

Travel

NAME	TELEPHONE	WEBSITE
Omega Travel	800-756-8309	www.owl.net

AIRLINES		
NAME	TELEPHONE	WEBSITE
Alaska	800-252-7522	www.alaskair.com
American	800-433-7300	www.aa.com
Continental	800-347-9297	www.continental.com
Delta	800-221-1212	www.delta-air.com
Horizon	800-547-9308	www.horizonair.com
Southwest	800-435-9792	www.southwest.com
United	800-241-6522	www.ual.com
USAirways	800-428-4322	www.usairways.com

RENTAL CARS		
NAME	TELEPHONE	WEBSITE
Alamo	800-327-9633	www.goalamo.com
Avis	800-331-1212	www.avis.com
Budget	800-527-0700	www.drivebudget.com
Dollar	800-800-4000	www.dollar.com
Enterprise	800-736-8222	www.enterprise.com
Hertz	800-654-3131	www.hertz.com
National	800-227-7368	www.nationalcar.com
Thrifty	800-847-4389	www.thrifty.com

OTHER		

Smokejumper Base Index

ALASKA		
ADDRESS	TELEPHONE	FAX
1513 Gaffney Road Ft. Wainwright, AK 99703	800-237-3650	907-356-5548

BOISE		
ADDRESS	TELEPHONE	FAX
3833 South Development Avenue Boise, ID 83705	800-925-8307	208-387-5399

GRANGEVILLE		
ADDRESS	TELEPHONE	FAX
Route 2, Box 475 Grangeville, ID 83530	208-983-1964	208-983-5148

McCALL		
ADDRESS	TELEPHONE	FAX
USFS Payette NF Box 1026 McCall, ID 83638	208-634-0370	208-634-0301

MISSOULA		
ADDRESS	TELEPHONE	FAX
Aerial Fire Depot Box 6, Airport Terminal Missoula, MT 59802	406-329-4896	406-329-4891

NORTH CASCADES SUB BASE		
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USFS Okanogan NF 23 Airport Road Winthrop, WA 98862	800-997-2031	800-997-2077

REDDING		
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6101 Airport Road Redding, CA 96002	530-226-2800	530-226-2897

REDMOND		
ADDRESS	TELEPHONE	FAX
Redmond Air Center USFS 1740 SE Ochoco Way Redmond, OR 97756	541-548-8774	541-548-8769

WEST YELLOWSTONE		
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Interagency Hot Shot Crew Regional Index

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INITIAL ATTACK FIRE SIZE-UP

FIRE NAME _____ FIRE NUMBER _____
DESCRIPTION/ LOCATION: _____
ARRIVAL DATE: _____ TIME: _____
LEGAL: Township _____ Range _____ Section(s): _____
COORD: Latitude _____ Longitude _____
ESTIMATED CONTAINMENT DATE: _____
ESTIMATED CONTROL DATE: _____

INITIAL FIRE SIZE-UP

Are any resources threatened? _____
_____
Does the fire constitute any control problems? _____
_____
Are additional resources needed? _____
_____
HAZ-MITE: _____
SPREAD POTENTIAL:
1) Low 2) Moderate 3) High 4) Extreme
CHARACTER OF FIRE:
1) Smoldering 5) Running 9) Torching 7) Crown/Spotting
2) Creeping 6) Spotting 8) Crowning 9) Erratic
SLOPE ON HEAD OF FIRE:
1) 0 - 25% 2) 26 - 40% 3) 41 - 55% 4) 56 + %
POSITION ON SLOPE:
1) Ridgetop 4) Middle (1/3 of slope 7) Valley Bottom
2) Saddle 5) Lower (1/3 of slope 8) Mesa/ Plateau
3) Upper (1/3 of slope 6) Canyon bottom 9) Flat or rolling
FUEL TYPE:
1) Grass 4) Pocosin/ Swamp 7) Aspen
2) Grass/ brush 5) Ladderpole/ pine 8) Logging/ Thinning Slash
3) Oak/brush 6) Spruce/ Fir 9) Other _____
WINDSPEED: _____ mph
WIND DIRECTION:
1) Calm 3) NE 5) SE 7) SW 9) NW
2) North 4) East 6) South 8) West 10) Erratic

[redacted]

Initial Attack Fire Debriefing Checklist

The following are topics for mission debriefings between personnel and fire managers they work for. The intent of the debriefing is to improve mission effectiveness and safety.

Communication

a) Between dispatch and fire?
b) Between assigned resources on fire (AAC, ground forces, etc.)?
c) Frequencies correctly assigned for geographic area?

Resources assigned

a) Adequate initial attack force? Timeliness of ordering and responses?
b) Initial resource assignments appropriate?
c) Assigned resources relevant to fire situation? (i.e. – engines, crews, amps)
d) Resource performance evaluation?

Logistics/ Support

a) Response issues?
b) Problems moving personnel around on fire?
c) Supplies – food, water, and equipment?

Dispatch

a) Initial briefing by dispatch adequate?
b) Updated by dispatch on weather, spot forecasts, fuel moistures, ETA's?
c) Information flow between fire and dispatch smooth, clear, timely, etc?

Tactics/ Strategy

a) Methods employed for IA?
b) Effectiveness of IA?
c) Mop up?
d) Modified Suppression tactics (monitoring, light hand, etc.)?

Safety Concerns

a) Close calls – fire activity/ dangerous situations, snags, rolling objects, etc.)?
b) Protective gear. (PPE)?
c) Tactical considerations based on LCES, 10 Standard Orders, 18 Situations?

Demobilization

a) Personnel and equipment released at appropriate time?
b) Dispatch notified?
c) Fire status, (out, monitoring, etc.)?
d) Rehabilitation needed or completed?
e) Reports completed. (fire, performance, outage, time, etc.)?

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INITIAL OUT OF ZONE ASSIGNMENT INFORMATION

Minimum information to be obtained before departing:

- Fire Name
- Fire Job Assignment
- Reporting Location
- Specific location of the fire
- Location of the check in point
- Reporting time
- Travel instructions
- Any special communications instructions
- Resource Order number and request number, (if applicable)
- Unit designator, (if applicable)

CHECK-IN PROCEDURES AT INCIDENT

Check in officially logs you in at the incident and provides important release and demobilization information. You check in once. Check-in Recorders may be found at the following locations:

- Incident Command Post
- Base or Camp
- Staging Area
- Helibase
- If you are instructed to report directly to a line assignment, you should check-in with Division/Group Supervisor.

OBTAIN BRIEFING AND BRIEF SUBORDINATES

After check-in, locate your incident supervisor and obtain you initial briefing. The items that you receive in your briefing, in addition to functional objectives, will also be needed by your subordinates in their briefing. Your briefing should include:

- Identification of specific job responsibilities expected of you for satisfactory performance.
- Identification of co-workers within you job function.
- Definition of work area.
- Identification of eating and sleeping arrangements.
- Procedural instructions for obtaining additional supplies, services and personnel.
- Identification of operational period work shifts.
- Clarification of any important points pertaining to assignments that may be questionable.
- Provisions for specific debriefing at the end of an operational period.

IC TYPE 3 / EXTENDED ATTACK HELPLIST

1. **Recognize Situation / Limitations:**
   - Get your hands on a cell phone and don't be afraid to use it!
   - Utilize the Intel. organize a think tank. You may very well have over 150 years of experience at your disposal to make your life a lot easier.

2. **Determine Objectives and Needs:**
   - Make a point to get a thorough briefing from area management about objectives.
   - Resource values: What's at risk? What are their values? What's adjacent to your fire and its value? Special use areas, Wildlife management areas, etc. Is the area slated for prescribed fire in the future? If possible, have local persons clearly identify these areas on a map for you.
   - Document what the priorities are for the incident from critical to minimal.

3. **Coordinate and Recognize Additional Resource Needs:**
   - Realize that local area may be overwhelmed with fire activity and you may not get what you want.
   - Be as specific as you can. Take what you can get!
   - Crews: Type, transportation, w/ tools, saws, food, water, bags, etc.
   - Engines: Type, w/ fuel, foam, etc.
   - Air Support: Helicopters (w/ bucket), Air Tankers w/ Lead Plane, Air Attack, etc.

4. **Establish Appropriate ICS Structure – Delegate**

   Possible Overhead Positions:
   - Operations: directly supervise suppression efforts
   - Logistics: begin assessing logistical needs such as feeding, fuel, sleeping arrangements, special equipment, etc.
   - Plans: to address the following incident planning needs:
     - Develop a communications plan:
       Frequency Mgmt. (Command, Tactical, Air Ops, A/G, etc.)
     - Establish formal check-in and resource status.
     - Gather, record and provide on-site information to firefighting personnel and dispatch.
     - Take on site weather and obtain weather reports and forecasts.
     - Start written Incident Action Plan, if required by IC.
     - Prepare maps.
     - Assist in developing a Wildfire Situation Analysis.
   - Utilize Local and Regional people: Ask about local drivers for logistics. Inquire about meals at or from local establishments. A local camp manager is a great help usually.

IC TYPE 3 / EXTENDED ATTACK HELPLIST

Other positions to consider:

- Finance
- Helispot Manager
- Timekeeper
- Strike Team/ Task Force Leader
- Field Observer
- Situation Unit Leader (Plans)
- EMT / Medical Unit Leader
- Safety Officer
- Staging Area Manager

5. **Cost:**
   - Get your hands on ICS Form 209
   - Daily and Total. This usually has a lot to do with incidents becoming Type II.
   - Ask about a cap on spending, this will give you an idea on how bad the managers really want the fire out.

BEWARE OF HIDDEN AGENDAS AND ALIEN CONSPIRACIES (Roswell NM.): Sometimes things are not what they seem in the desert (illusions and mirages). Don't always trust your instincts unless they are inherently bad.

DOCUMENT EVERYTHING!!! It may become a legal document later.... "CYA!"

One day order amounts:

MRE's	½ case / person	10 cases / crew
Water	2 ½ gallons per person	10 5 gallon Cubits / crew
Batteries	AA's	1 Box per radio
Fuel	Pumps (5 gal./ 2 hours)	
	Order two pump kits (one is probably short something you really need).	
	Chainsaws (1 gal. fuel / 4 hours) (1 qt. oil / 4 hours)	
	Hose and appliances: Figure 100 ft. 1" laterals for every 200 ft. 1 ½" trunk line.	
	Remember: Gated "Y's", nozzles, hose clamps, etc.	

Other ideas:

Toilet Facilities?	Garbage Bags?
Hot Meals?	Tents?
Medical Plan?	Phones?
Fuel Tank?	Contact the American Red Cross

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IC TYPE 3 / EXTENDED ATTACK HELPLIST

Things you might want for your own IC73 kit:

- Cell Phone
- Tent
- Sleeping Bag
- Flagging
- MRE's
- ICS forms
- Tools (shovel, Pulaski, etc.)
- Fusees
- Garbage bags
- First Aid Kit
- Batteries
- Extra radio (dedicated to Air Ops)
- Cubies
- Crew time reports
- Fireline Handbook
- Fire and Aviation Directory
- Field Ops Guide
- Crew Evaluation Guide
- Miscellaneous Items:

Pens	Pencils
Post-its	Maps
Paperclips	Notebooks

ICS forms to consider for the kit:

201 – Incident Briefing
202 – Incident Objectives
203 – Organization Assignment List
204 – Division Assignment List
209 – Incident Status Summary
213 – General Message
214 – Unit Log
215 – Operations Planning Worksheet
215A – Incident Safety Analysis
220 – Air Operations Summary

Firefighter Crew Briefing:

- Fire Name and Number.
- Size, Location and Division (Maps?).
- Topography.
- Fuels.
- Weather: previous, current, and expected.
- Fire Behavior: previous, current, and expected.
- Objectives: Confine, Contain, Control, Other_____.
- Strategy: Overall Plans of Action (alternatives included) Day/ Night shifts, Line and Backfire, etc..
- Tactics: Direct/Indirect, Handlines, Water, Retardant, MIST, etc..
- Resources: Type and numbers (current and planned).
- Communications: Radio freqs., cell phone numbers, repeaters, etc..
- Air Support: Tankers, Helicopters, helispots, jump and cargo drop zones.
- Special and Political Considerations: Urban interface, Wilderness, Cultural, Multi-agency or Line Officer concerns (EFSA), other_____.
- Specific shift length and assignment.
- Safety concerns: LCES, Standards and Watchouts, Risk Mgt. (situation awareness, hazards, risk controls, go/ no-go decisions, evaluation), other_____.
- Food, Shelter, Sanitation, and Camping / Incident Command area.
- Identify Resource Qualifications.
- Crew Condition and Needs: fatigue, food and water, supplies, other_____.
- FEEDBACK_____!

Extended Attack Transition Analysis

If you check "YES" on 3 or more items, consider ordering an Incident Management Team.

	YES	NO
Fuels extremely dry and susceptible to long-range spotting or you are currently experiencing extreme fire behavior.	☐	☐
Weather forecast indicating no significant relief or worsening conditions.	☐	☐
Current or predicted fire behavior dictates indirect control strategy with large amounts of fuel within planned perimeter.	☐	☐
Performance of firefighting resources affected by cumulative fatigue.	☐	☐
Overhead overextended mentally and/or physically.	☐	☐
Communication ineffective with tactical resources or dispatch.	☐	☐
150 or more personnel assigned to incident or more than three divisions.	☐	☐
Incident action plans, briefings, etc. missing or poorly prepared.	☐	☐
Variety of specialized operations, support personnel, or equipment.	☐	☐
Unable to properly staff air operations.	☐	☐
Limited local resources available for initial attack.	☐	☐
Heavy commitment of local resources to logistical support.	☐	☐
Existing forces have worked 24 hours without success.	☐	☐
Resource unfamiliar with local conditions and tactics.	☐	☐
Urban interface: structures, developments, recreational facilities, or potential for evacuation.	☐	☐
Fire burning or threatening more than one jurisdiction and potential for unified command with different or conflicting management objectives.	☐	☐
Unique natural resources, special-designation areas, critical municipal watershed, T&E species, cultural value sites.	☐	☐
Sensitive political concerns, media involvement, or controversial fire policy.	☐	☐

Principles of Mop-Up

- Start mop-up as soon as line construction and burnout ops are complete. Mop-up threatening situations first.
- Allow fuel to burn up if it will do so promptly and safely.
- Mop-up entire area, if practical, on small fires.
- Mop-up on large fires far enough inside the fireline to be sure that no fire can blow out, spot, or burning materials roll over the fireline under and anticipated worst possible conditions.
- Fell only those snags, which could result in spotting or fire spread across the line.
- Search for smoldering spot fires.
- Consider potential for problems from snags, punky logs, and fuel concentrations outside the control line.
- Search for and dig out burning fuels to reduce heat and danger of spotting.
- Trench below, block, or turn heavy logs, stumps, or material so they cannot roll.
- Feel with the back of your hands for possible smoldering spots close to the line, (use care, go slow).
- Use water in conjunction with hand tools. In dry mop-up, stir and mix hot embers with dirt.
- Use water sparingly, but use enough to do the job. Match the amount of water to the job.
- When using water to mop-up deep-burning fuels such as peat, duff, or needles, scrape or stir the fuel while applying water.
- Adding wetting agents of foam to water will greatly increase effectiveness of water, especially in deep burning fuels.
- Cold trail.

Division / Group Supervisor Team Assignment Checklist

Items you need to obtain initially:

- Resource Order.
- Repor /ng / Check-in location.
- Crew time Report Booklet.
- Transportation.
- Radio.
- Cell Phone.
- GPS.
- Tent.
- Sleeping Bag.
- Travel Bag.
- PU Bag.
- Tool.

Other handy items you may want to gather:

- Map (Atlas).
- Notepad, pens, pencils, etc.
- Flagging.
- Firefire Handbook.
- Field Operations Guide.
- ICS form 214 Unit Log.
- ICS form 209 Resource Status Summary.
- First Aid Kit.
- Fusees.
- AA Batteries.
- Foam Pad.
- Extra food and water.
- Belt Weather Kit

TASK FORCE/STRIKE TEAM LEADER

The Task Force/ Strike Team Leader reports to a Division/Group supervisor and is responsible for performing tactical missions as assigned on a division or segment. The Leader reports work progress, resource status, and other important information to a Division/Group Supervisor and maintains work records on assigned personnel.

- Obtain briefing from Division/Group Supervisor.
- Review assignments with subordinates and assign tasks.
- Travel to and from line with assigned resources.
- Monitor and inspect progress and make changes as necessary.
- Coordinate activities with adjacent strike team/ task forces and single resources.
- Keep supervisor advised of situation and resource status.
- Retain control of assigned resources while off line (i.e. Feeding, time keeping, sleeping area assignment, etc.).
- Maintain Unit Log (ICS Form 214).

SINGLE RESOURCE BOSS

A Single Resource Boss is responsible for supervising and directing a fire suppression module such as a hand crew, an engine, a dozer, a tractor-plow, a firing team, or one or more fallers.

- Obtain briefing from the Task Force/ Strike Team Leader.
- Review assignments with subordinates and assign work tasks.
- Obtain necessary equipment and supplies.
- Review current and predicted weather conditions and brief subordinates of expected fire behavior.
- Brief subordinates on safety issues including escape routes and safety zones. Provide for their welfare.
- Monitor work progress.
- Ensure adequate communications with supervisor and subordinates.
- Keep supervisor informed of progress and any changes.
- Inform supervisor of problems with assigned resources.
- Brief relief personnel on the line at end of shift. Advise them of any changes in observed fire behavior.
- Return equipment and supplies to appropriate unit.
- Complete and turn in all time and use records on personnel and equipment.

Operational Leadership

- TAKE CHARGE of assigned resources.
- MOTIVATE firefighters with a "can do safely" attitude.
- DEMONSTRATE INITIATIVE by taking action in the absence of orders.
- COMMUNICATE by giving specific instructions and asking for feedback.
- SUPERVISE at the scene of action.
- LEAD BY EXAMPLE no one likes a hypocrite.

"Know thy enemy, know thyself and you will be victorious."
Sun Tzu, The Art of War

Structure Protection Checklist

- Stay mobile; keep engine running with lights on.
- Back equipment in for quick escape.
- Coil a short 1 ½" charged line with fog nozzle on your engine for safety and quick knock down.
- Don't make long lowlays. Know turnouts and bridge limits.
- Keep at least 100 gallons reserve in your tank.
- Check roads below the fire bin.
- Check each home for defense. Use Structure Assessment Checklist.
- Determine if residents are at home. Advise residents of escape routes, safety zones and evacuation center.
- Ask residents to evacuate threatened livestock or pets.
- Leave home lights on inside and out, day or night.
- Place owner's ladder at a corner of the home on least fire threat side.
- Coil and charge garden hoses.
- Check and mark Haz Mats; IE, LPG, pesticides, paint storage, etc.
- Don't enter a burning structure unless you are trained, equipped and authorized.
- If a home becomes involved, LEAVE IT, move on to one you can save.
- ALWAYS WEAR YOUR SAFETY GEAR.
- Firefighter safety and survival is the number one priority.

Structure Assessment Checklist

Address/ Property Name

- Numerical street address, ranch name, etc.
- Residents on site?

Road Access

- Paved, gravel or dirt.
- Number of lanes, vegetation clearance, defensible, safety zones.
- Undercarriage problems, 4x4 only?
- Turn outs, turn arounds.
- Bridges – adequate support structure?
- Creek crossings – approach angle, crossing surface.
- Terrain – road slope, position on slope, near chimneys, saddles, canyon bottom.
- Grade – greater than 15%

Structure/ Building

- Single residence, multiple occupancy, barn, fuel storage, unknown storage.
- Exterior walls – stucco or other non-combustible, wood frame, wood shake, or other combustible. Large unprotected windows facing heat source?
- Roof – asphalt or fiberglass shingle, tile, rock, metal or other low-combustible material; wood shake, debris, or other easily combustible material?
- Eaves – covered and little overhang, exposed with large overhang exposure?
- Other features – exposed wooden structural elements, overhangs slope, attached wood deck, lightweight flammable curtains.

Structure Assessment Checklist (cont.)

Clearances/ Exposures/ Defensible Space

- 100 ft. vegetation clearance, max. 18 in. High, 15% or less slope, good ground clearance, vegetation is low-combustible type. Or is clearance less than described?
- Predominate fuel bed in area surrounding structure is light, medium, heavy continuous, non-continuous.
- Flammable trees adjacent to structure?
- Other combustibles adjacent to structure?
- High voltage lines or transformers near apparatus placement area?
- Structure located on narrow ridge, knoll, narrow canyon, chimney, mid-slope; defensible space less than 200 feet?

Hazardous Materials

- Pesticides, herbicides, DOT/NFPA/UN symbols, other.

Available Water

- Hydrant or standpipe, water storage tank with valve, swimming pool with access.

Evacuation Needs – What is required?

Estimated Resources for Protection

- Number and type engines, water tenders, crews, dozers?

[redacted]

[redacted]

[redacted]

[redacted]				

[redacted]	

[redacted]

[redacted]

[redacted]

[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]	[redacted]

FIRE NAME

FIRE NUMBER

UNIT

ST	OPC	CODING	ELEMENT	PROJ

ITEM DESCRIPTION	SUPPLY NO.

INCIDENT OBJECTIVES

1. INCIDENT NAME	2. DATE PREPARED	3. TIME PREPARED

4. OPERATIONAL PERIOD (DATE/TIME)

5. GENERAL CONTROL OBJECTIVES FOR THE INCIDENT (INCLUDE ALTERNATIVES)

6. WEATHER FORECAST FOR OPERATIONAL PERIOD

7. GENERAL SAFETY MESSAGE

8. ATTACHMENTS (✓ IF ATTACHED)

- ☐ ORGANIZATION LIST (ICS 203)
- ☐ ASSIGNMENT LIST (ICS 204)
- ☐ COMMUNICATIONS PLAN (ICS 205)
- ☐ MEDICAL PLAN (ICS 206)
- ☐ INCIDENT MAP
- ☐ TRAFFIC PLAN
- ☐ _____
- ☐ _____
- ☐ _____

9. PREPARED BY (PLANNING SECTION CHIEF)	10. APPROVED BY (INCIDENT COMMANDER)

ORGANIZATION ASSIGNMENT LIST

1. BRANCH | 2. DIVISION/GROUP | **ASSIGNMENT LIST**

3. INCIDENT NAME | 4. OPERATIONAL PERIOD
DATE _____ TIME _____

5. OPERATIONAL PERSONNEL
OPERATIONS CHIEF _____ DIVISION/GROUP SUPERVISOR _____
BRANCH DIRECTOR _____ AIR TACTICAL GROUP SUPERVISOR _____

6. RESOURCES ASSIGNED THIS PERIOD

STRIKE TEAM/TASK FORCE RESOURCE DESIGNATOR	RMT	LEADER	NUMBER PERSONS	TRANS. NEEDED	PICKUP PT./TIME	DROP OFF PT./TIME

7. CONTROL OPERATIONS

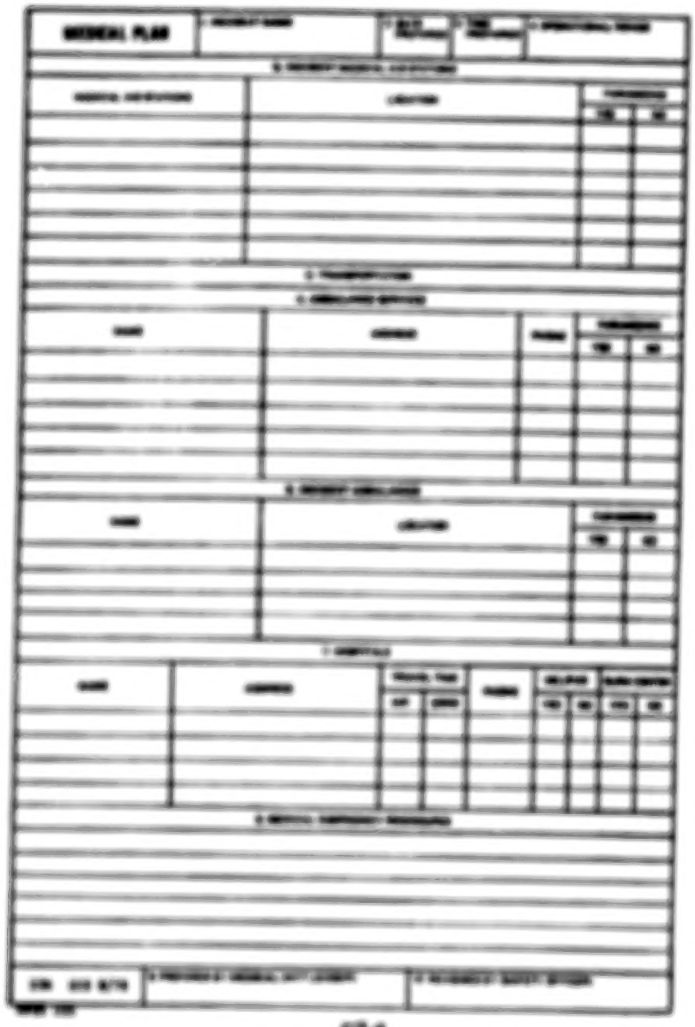
8. SPECIAL INSTRUCTIONS

9. DIVISION/GROUP COMMUNICATIONS SUMMARY

FUNCTION	FREQ.	SYSTEM	CHAN.	FUNCTION	FREQ.	SYSTEM	CHAN.
	VOICE				VOICE		
	REPEAT				REPEAT		
DIV/GROUP				GROUND TO AIR			
TACTICAL							

PREPARED BY (RESOURCE UNIT LEADER) | APPROVED BY (PLANNING SECT. CH.) | DATE | TIME

INCIDENT RADIO COMMUNICATIONS PLAN


MEDICAL PLAN

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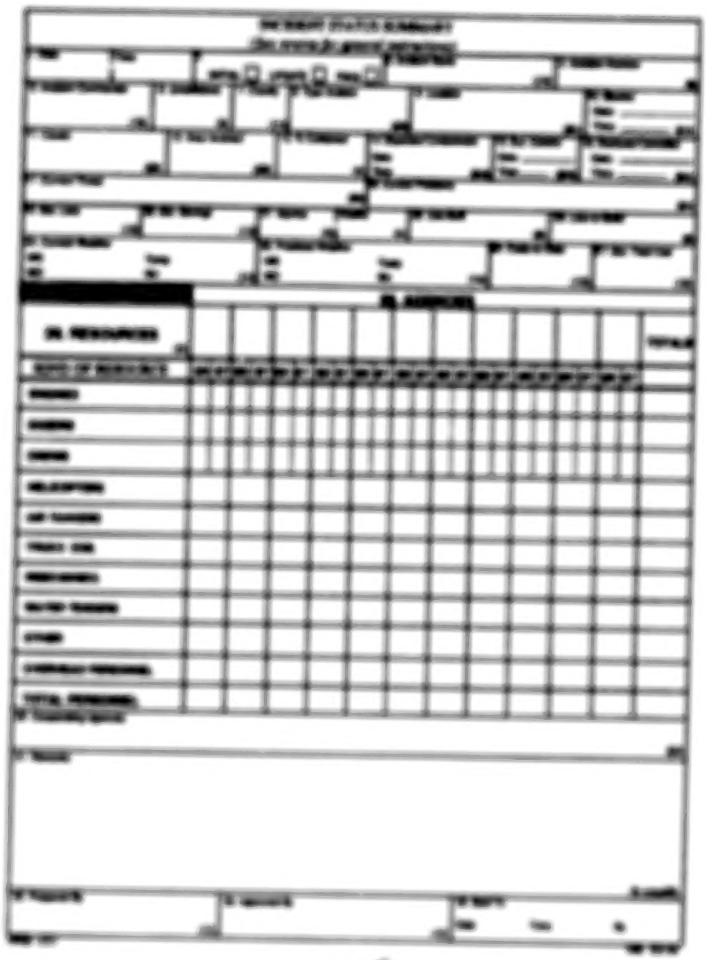

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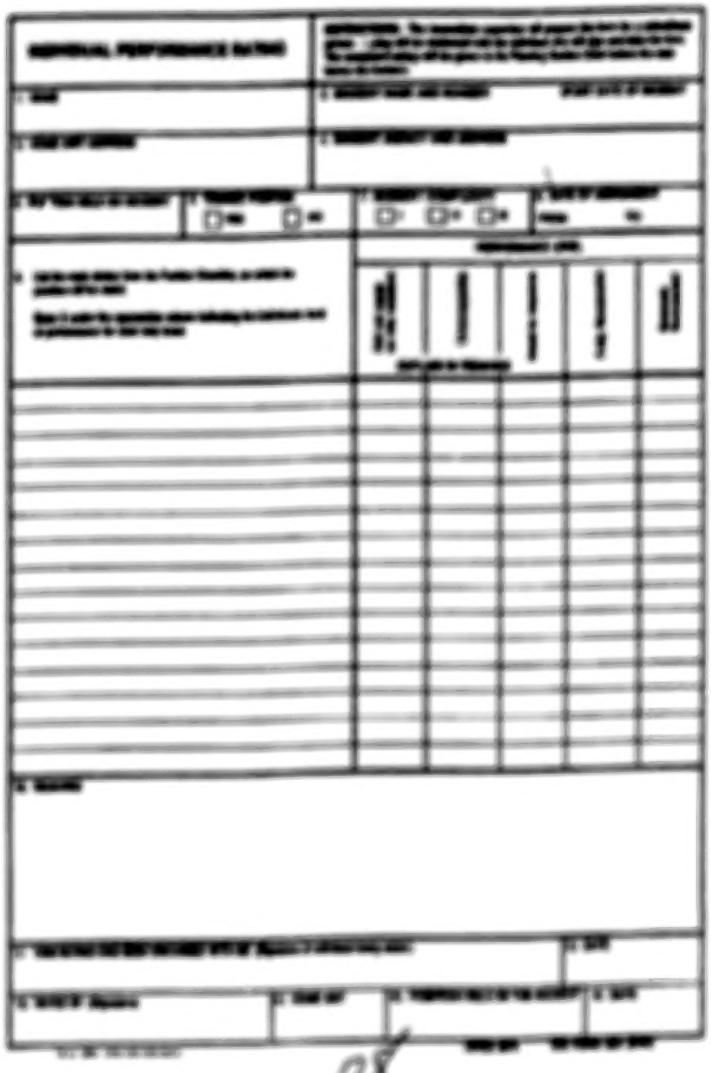

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NOTES

RACAL Radio Programming Instructions

1. Unlock the keyboard, (pressing the ☐ button and the enter button).
2. Press enter, then use the center arrow keys to scroll to "SELECT" and press enter.
3. Scroll down to NAME and be sure that it shows "PRI," if it doesn't press enter and then use the arrow keys to highlight "PRI" and then press enter.
4. Scroll up to "ZONE" and be sure that it is in the right group that you want to program, if not press enter and then use the arrow keys to highlight the "ZONE" you want and then press enter.
5. Then use the ☐ button to escape to the main programming screen, scroll down until "PROGRAM" is highlighted and then press enter.
6. Use the arrow keys to scroll down to "CHANNEL" and then press enter.
7. Use the channel select knob on top of your radio to change channels while programming.
8. Use your arrow keys to scroll down to "TAG" and then press enter. Use the alphanumeric keypad to label the channel and then press ENTER when completed.
9. Be sure that the following are shown during your programming:
   - MODE = ANALOG
   - B/W = 25kHz (wide band) and 12.5kHz (narrow band), *If you don't know ASK!*
   - ENCRPT = DISABD
10. To program in the Receive (Rx) freq, Highlight "RX" and press enter, then use the keypad to write in the Rx freq. When finished press enter.
11. Scroll down to the "RXSQUE", (Rx squelch mode), if there is no tone for the Rx freq, then make sure that it reads, "NONE". If the Rx freq. does have a tone guard on it, press enter and then use the arrow keys to scroll up or down to the required tone guard and then press enter when you are done.
12. Repeat the same steps with the Transmit (TX) freq. as you did with the Rx freq. (Note: if there is no tone guard for the TX freq, the display should read TXSQUE = NONE).
13. Make sure that your power settings are set right.
    - LO PWR = 10 W
    - HI PWR = 50 W
14. Scroll to the "CHANNEL" screen, if you are done programming, then press the ☐ button until you get to the operating screen, if you need to program another channel then use the top channel select knob and repeat steps 8 – 13.

NOTE: The programming password is [redacted]

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RACAL Radio Programming Helpful Hints

The three-way scan switch on top radio is used to changing scanning modes.

- A = All Scan
- B = Scan Priorities
- C = No Scan

To set scan priorities on your group select the channel that you wish to scan, then press the "diamond" key to activate scan and the "circle" key to deactivate scan.

- Pressing the "diamond" key quickly will allow you to scan that single channel. [Indicated by the box around the "C" on your screen.]
- Pressing the "diamond" key slowly will allow you to scan the whole group of channels. [Indicated by the box around the "Z" on your screen.]

EFFECTIVE RADIO USE

- Tilting a radio 45 degrees lowers the effective transmitting power by half, so that a two-watt radio performs as a single watt radio.
- Use of a chest harness reduces the effectiveness of the radio, since the radio is held at a 45 degree angle, the effective transmit power of the radio is reduced. There is also a decrease in transmitting and receiving capabilities due to shielding from your body.
- To increase communications in marginal coverage areas, raise the radio antenna in the following ways:
    1. Remove the radio from the chest harness and hold it in an upright position.
    2. Use a speaker microphone and lift the radio above your head to the full extent of your arm.
    3. Walk up the side of a hill. A 10-foot rise in elevation can make the difference.

KING RADIO PROGRAMMING INSTRUCTIONS

1. Select the group you want to program. Press (#) and the desired group number. Press (ENT).
2. Bridge the gap between the rear upper and lower contacts of the accessory jack with a metal connector, then hold the (FCN) key. (Approx. 3 sec.)
3. At the "ID" display, enter the 6-digit password, (000000), and press (ENT).
4. At the "CH 00" display, press the channel number to program and press (ENT). The display will change to the desired channel.
5. Press the (FCN) key and Receive (Rx) freq. will be displayed. To skip press (FCN). To change press (CLR), the new Rx frequency, then (ENT).
6. Now the Rx code guard will be displayed. Remember, as a rule we input tone frequencies on the TxCG. To skip press (FCN).
7. The Transmit (Tx) freq. is displayed. To skip press (FCN). To change press (CLR), enter new Tx freq. and press (ENT).
8. Now the Tx code guard will be displayed. To skip press (FCN). To change press (CLR), enter now the new TxCG and press (ENT).
9. Now the channel label will be displayed, press (FCN).
10. You are now back at the entry point, "PRG" will appear in the upper left of the display. Review changes by pressing (FCN) repeatedly.
11. To enter a new channel to program, go back to step four.
12. When changes are complete, turn radio off and then on again to use the new frequency information.

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FIRE RADIO MALFUNCTION/ ABNORMALITY REPORTING

Name:	
Home Unit:	
Position:	
Incident Name:	Incident No:
Incident Location:	
Narrative:	
Signature:	Date:

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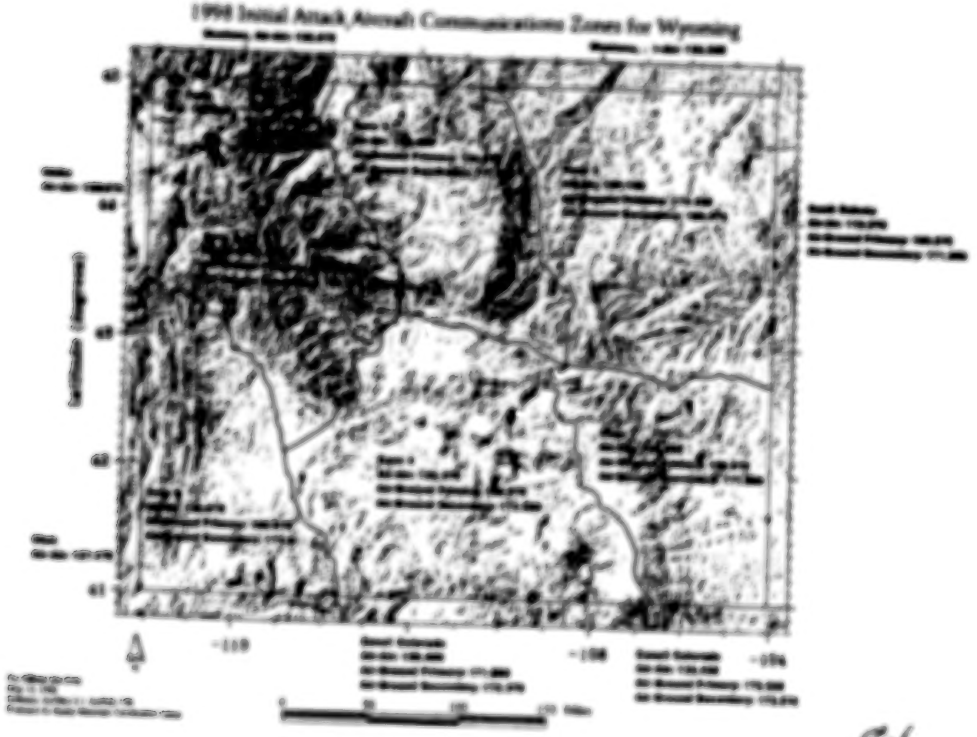
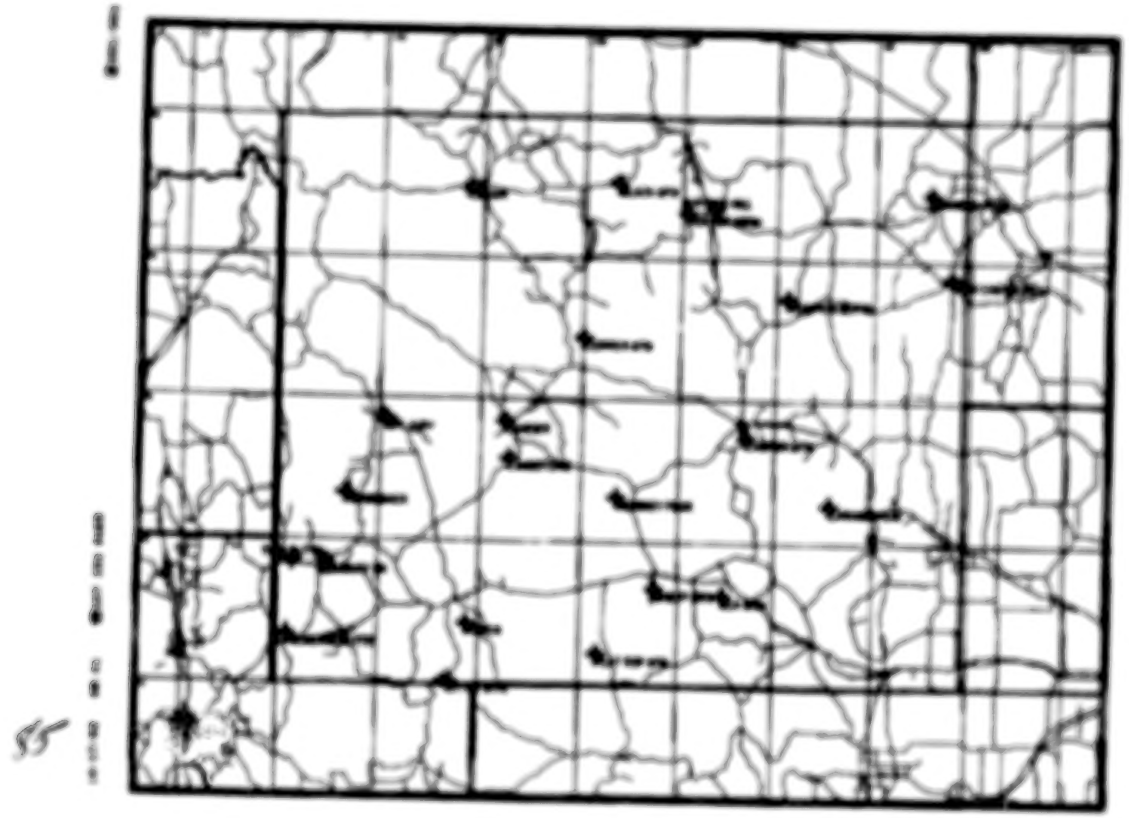
1998 Initial Attack Aircraft Communications Zones for Wyoming





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North Zone BLM Fire Operations
FACAL Radio Frequencies & Locations
South

Name	Channel	Frequency	Tone	Location
Guard or Action		Rx		
BLM	1	Tx		State Wide
Copper	2	Rx		Local
		Tx		
Black Mountain	3	Rx		Local
		Tx		
Air to Ground 2	4	Rx		Local
		Tx		
Air to Ground 3	5	Rx		Local
		Tx		
Flight Following	6	Rx		State Wide
		Tx		
I-Valley	7	Rx		Local
		Tx		
Washakie County Fire	8	Rx		Local
		Tx		
Hot Springs County Fire	9	Rx		Local
		Tx		
Fremont County Fire	10	Rx		Local
		Tx		
Wyoland Fire	11	Rx		Local
		Tx		
Tensleep Fire	12	Rx		Local
		Tx		
Bolt Dispat	13	Rx		Local
		Tx		
WY State Forestry	14	Rx		State Wide
		Tx		
National Park Service	15	Rx		Local
		Tx		
FD Dispat (Emergency)	16	Rx		State Wide
		Tx		

Zone: FIRE 1
Rank: FIRE

North Zone BLM Fire Operations
RACAL Radio Frequencies & Locations
North

Name	Channel		Frequency	Tone	Location
Oriana of Action BLM	1	Rx Tx	[illegible]		Basic Wide
Copper	2	Rx Tx	[illegible]		Local
Caster	3	Rx Tx	[illegible]	123.0	Local
Air to Ground 2	4	Rx Tx	[illegible]		Local
Air to Ground 3	5	Rx Tx	[illegible]		Local
Flight Following	6	Rx Tx	[illegible]		Basic Wide
FS Rx	7	Rx Tx	[illegible]		Local
Washakie County Fire	8	Rx Tx	[illegible]		Local
Hot Springs County Fire	9	Rx Tx	[illegible]		Local
Park County Fire	10	Rx Tx	[illegible]		Local
Park County Fire 2	11	Rx Tx	[illegible]		Local
Big Horn County Fire	12	Rx Tx	[illegible]		Local
Empty	13	Rx Tx			
WY State Forestry	14	Rx Tx	[illegible]		Basic Wide
National Park Service	15	Rx Tx	[illegible]		Local
BT Relief (Emergency)	16	Rx Tx	[illegible]		Basic Wide

Zone: FIRE 2
Rack: FIRE

North Zone BLM Fire Operations
RACAL Radio Frequencies & Locations
West

Name	Channel	Frequency	Tone	Location
Scene of Action BLM	1	Rx [illegible] Tx [illegible]		Reno Wide
Copper	2	Rx [illegible] Tx [illegible]		Local
Cedar	3	Rx [illegible] Tx [illegible]		Local
Black Mountain	4	Rx [illegible] Tx [illegible]		Local
Air to Ground 2	5	Rx [illegible] Tx [illegible]		Local
Air to Ground 3	6	Rx [illegible] Tx [illegible]		Local
Flight Following	7	Rx [illegible] Tx [illegible]		Reno Wide
Shoshone National Forest	8	Rx [illegible] Tx [illegible]		Local
Shoshone National Forest North	9	Rx [illegible] Tx [illegible]		Local
Cedar Mountain	10	Rx [illegible] Tx [illegible]		Local
Dead Indian	11	Rx [illegible] Tx [illegible]		Local
Wood Ridge	12	Rx [illegible] Tx [illegible]		Local
Copper	13	Rx [illegible] Tx [illegible]		Local
WY State Forestry	14	Rx [illegible] Tx [illegible]		Reno Wide
National Park Service	15	Rx [illegible] Tx [illegible]		Local
BI Relief (Emergency)	16	Rx [illegible] Tx [illegible]		Reno Wide

Zone: FWZ 3
Rev: 1912

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North Zone BLM Fire Operations

RACAL Radio Frequencies & Locations

EAST

Name	Channel		Frequency	Tone	Location
Scene of Action BLM	1	Rx	168.4000		State Wide
		Tx	168.4000		
Copper	2	Rx	168.5250		Local
		Tx	168.5250		
Cedar	3	Rx	168.5250		Local
		Tx	172.4375	123.0	
Black Mountain	4	Rx	168.5250		Local
		Tx	172.4375		
Air to Ground 2	5	Rx	168.6750		Local
		Tx	168.6750		
Air to Ground 5	6	Rx	172.3250		Local
		Tx	172.3250		
Flight Following	7	Rx	168.6500		State Wide
		Tx	168.6500		
Big Horn National Forest	8	Rx	169.9250	110.9	Local
		Tx	169.9250	110.9	
Big Horn National Forest Direct	9	Rx	170.5250	110.9	Local
		Tx	170.5250	110.9	
Broken Back	10	Rx	170.5250	110.9	Local
		Tx	168.1250	136.5	
Medicine Mountain	11	Rx	170.5250	110.9	Local
		Tx	168.1250	156.7	
Dome Muuntain	12	Rx	170.5250	110.9	Local
		Tx	168.1250	123.0	
BIA Direct	13	Rx	166.3250		Local
		Tx	166.3250		
WY State Forestry	14	Rx	151.1600		State Wide
		Tx	151.1600		
National Park Service	15	Rx	154.8750		Local
		Tx	154.8750		
Air Guard (Emergency)	16	Rx	168.6250		State Wide
		Tx	168.6250		

Zone: FIRE 4
Bank: FIRE

South Zone BLM Fire Operations

RACAL Radio Frequencies & Locations

Lander

Name	Channel		Frequency	Tone	Location
Shoshone NF	1	Rx	172.3750		Local
		Tx	172.3750		
Air to Ground	2	Rx	169.9750		Local
		Tx	169.9750	110.9	
FERN	3	Rx	154.2800		State Wide
		Tx	154.2800		
Mutual Aid	4	Rx	154.8750		State Wide
		Tx	154.8750		
Scene of Action BLM	5	Rx	168.4000		State Wide
		Tx	168.4000		
RDO	6	Rx	168.2750		Local
		Tx	168.2750		
Lander Rural	7	Rx	154.4000	100.0	Local
		Tx	154.4000		
Road & Bridge	8	Rx	155.1150	107.2	Local
		Tx	155.1150		
Limestone	9	Rx	168.2750	131.8	Local
		Tx	164.2500		
Copper	10	Rx	168.2750	136.5	Local
		Tx	164.2500		
Fremont County Fire	11	Rx	154.3550		Local
		Tx	154.3550		
Mount Archer - USFS	12	Rx	172.3750	156.7	Local
		Tx	168.7500		
BIA	13	Rx	166.3250		Local
		Tx	166.3250		
Weather	14	Rx	162.4750		State Wide
		Tx			
Whiskey	15	Rx	168.2750	146.2	Local
		Tx	164.2500		
Air Guard (Emergency)	16	Rx	168.6250		State Wide
		Tx	168.6250		

Zone: FIRE 5
Bank: FIRE

South Zone BLM Fire Operations

RACAL Radio Frequencies & Locations

Rawlins

Name	Channel		Frequency	Tone	Location
Flight Following	1	Rx	168.5750		National
		Tx	168.5750		
NIMS Call Up	2	Rx	168.5750		National
		Tx	165.0000	136.5	
FERN	3	Rx	168.5750		State Wide
		Tx	165.0000	131.8	
Law Mutual Aid	4	Rx	169.9750		State Wide
		Tx	169.9750		
Scene of Action BLM	5	Rx	168.6750		State Wide
		Tx	168.6750		
Rawlins Base	6	Rx	168.6500		Local
		Tx	168.6500		
Elk Mountain Rptr	7	Rx	154.2800		Local
		Tx	154.2800		
Fleitop Rptr	8	Rx	168.5500		Local
		Tx	168.5500		
Limestone Rptr	9	Rx	155.0550		Local
		Tx	155.0550		
Copper Mountain Rptr	10	Rx	154.4300		Local
		Tx	154.4300		
Whiskey Peak Rptr	11	Rx	168.7250		Local
		Tx	168.7250		
Laramie Peak Rptr	12	Rx	168.1250		Local
		Tx	168.1250		
Rawlins Portable Rptr	13	Rx	151.2950		Local
		Tx	151.2950		
Empty	14	Rx			
		Tx			
Empty	15	Rx			
		Tx			
Air Guard (Emergency)	16	Rx	168.6250		State Wide
		Tx	168.6250		

Zone: FIRE 6
Bank: FIRE

Southwest Zone BLM Fire Operations

RACAL Radio Frequencies & Locations

West

Name	Channel		Frequency	Tone	Location
Scene of Action BLM	1	Rx	168.4000		State Wide
		Tx	168.4000		
Aspen Mountain	2	Rx	168.5750		Local
		Tx	168.5750		
Hogs Back	3	Rx	168.5750		Local
		Tx	165.0000	110.9	
Air to Ground 6	4	Rx	168.6750		State Wide
		Tx	168.6750		
Flight Following	5	Rx	168.6500		State Wide
		Tx	168.6500		
FERN	6	Rx	154.2800		State Wide
		Tx	154.2800		
NIMS Call Up	7	Rx	168.5500		State Wide
		Tx	168.5500		
Lincoln County Local N.	8	Rx	154.4450		Local
		Tx	154.4450		
Lincoln County Local S.	9	Rx	154.4150		Local
		Tx	154.4150		
Teton County Direct	10	Rx	155.7150		Local
		Tx	155.7150		
Teton County E. Direct	11	Rx	156.0150		Local
		Tx	156.0150		
USFS TAC 3	12	Rx	168.8000		Local
		Tx	168.8000		
Bridger Teton NF Direct N	13	Rx	169.1250		Local
		Tx	169.1250		
Grand Teton NP Direct	14	Rx	171.6750		Local
		Tx	171.6750		
State Forestry Fire	15	Rx	151.2950		State Wide
		Tx	151.2950		
Air Guard (Emergency)	**16**	**Rx**	**168.6250**		**State Wide**
		Tx	**168.6250**		

Zone: FIRE 7
Bank: FIRE

Southwest Zone BLM Fire Operations
RACAL Radio Frequencies & Locations
South

Name	Channel		Frequency	Tone	Location
Scene of Action BLM	1	Rx	168.4000		State Wide
		Tx	168.4000		
Aspen Mountain	2	Rx	168.5750		Local
		Tx	168.5750		
Little Mountain	3	Rx	168.5750		Local
		Tx	165.0000	136.5	
Medicine Butte	4	Rx	168.5750		Local
		Tx	165.0000	131.8	
Air to Ground 4	5	Rx	169.9750		State Wide
		Tx	169.9750		
Air to Ground 6	6	Rx	168.6750		State Wide
		Tx	168.6750		
Flight Following	7	Rx	168.6500		State Wide
		Tx	168.6500		
FERN	8	Rx	154.2800		State Wide
		Tx	154.2800		
NIMS Call Up	9	Rx	168.5500		State Wide
		Tx	168.5500		
Sweetwater County Local	10	Rx	155.0550		Local
		Tx	155.0550		
Uinta County Local	11	Rx	154.4300		Local
		Tx	154.4300		
WNF Evanston Direct	12	Rx	168.7250		Local
		Tx	168.7250		
WNF Mtn View Direct	13	Rx	168.1250		Local
		Tx	168.1250		
State Forestry Fire	14	Rx	151.2950		State Wide
		Tx	151.2950		
	15	Rx			
		Tx			
Air Guard (Emergency)	16	Rx	168.6250		State Wide
		Tx	168.6250		

Zone: FIRE 8
Bank: FIRE

Southwest Zone BLM Fire Operations

RACAL Radio Frequencies & Locations

East

Name	Channel		Frequency	Tone	Location
Scene of Action BLM	1	Rx	168.4000		State Wide
		Tx	168.4000		
Aspen Mountain	2	Rx	168.5750		Local
		Tx	168.5750		
Sheep Mountain	3	Rx	168.5750		Local
		Tx	168.2750		
Elk Mountain	4	Rx	168.5750		Local
		Tx	164.2500	110.9	
Flattop	5	Rx	168.5750		Local
		Tx	164.2500	123.0	
Limestone	6	Rx	168.5750		Local
		Tx	164.2500	131.8	
Copper Mountain	7	Rx	168.5750		Local
		Tx	164.2500	136.5	
Whiskey Peak	8	Rx	168.5750		Local
		Tx	164.2500	146.2	
Air to Ground 4	9	Rx	168.6750		State Wide
		Tx	168.6750		
Flight Following	10	Rx	168.6500		State Wide
		Tx	168.6500		
Mutual Aid	11	Rx	154.8750		State Wide
		Tx	154.8750		
FERN	12	Rx	154.2800		State Wide
		Tx	154.2800		
NIMS Call Up	13	Rx	168.5500		State Wide
		Tx	168.5500		
	14	Rx			
		Tx			
	15	Rx			
		Tx			
Air Guard (Emergency)	16	Rx	168.6250		State Wide
		Tx	168.6250		

Zone: FIRE 9
Bank: FIRE

Southwest Zone BLM Fire Operations

RACAL Radio Frequencies & Locations

North

Name	Channel		Frequency	Tone	Location
Scene of Action BLM	15	Rx	168.4000		State Wide
		Tx	168.4000		
Aspen Mountain	1	Rx	168.5750		Local
		Tx	168.5750		
Hoge Bark	2	Rx	168.5750		Local
		Tx	165.0000	110.9	
Twin Buttes	3	Rx	168.5750		Local
		Tx	165.0000	123.0	
Air to Ground 5	4	Rx	172.3250		State Wide
		Tx	172.3250		
Air to Ground 6	5	Rx	168.6750		State Wide
		Tx	168.6750		
Flight Following	6	Rx	168.6500		State Wide
		Tx	168.6500		
FERN	7	Rx	154.2800		State Wide
		Tx	154.2800		
NIMS Call Up	8	Rx	168.5500		State Wide
		Tx	168.5500		
Mutual Aid	9	Rx	154.8750		State Wide
		Tx	154.8750		
Sublette County Direct	10	Rx	154.9800		Local
		Tx	154.9800		
Sublette County Repeat	11	Rx	155.9400		Local
		Tx	154.8650		
Fremont County	12	Rx	141.3350		Local
		Tx	145.3350		
BTNF Direct E	13	Rx	166.2250		Local
		Tx	166.2250		
State Forestry Fire	14	Rx	151.2950		State Wide
		Tx	151.2950		
Air Guard (Emergency)	16	Rx	168.6312		State Wide
		Tx	168.6350		

Zone: FIRE 10
Bank: FIRE

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Eastern Zone BLM Fire Operations

RACAL Radio Frequencies & Locations

FIRE 1

Name	Channel		Frequency	Tone	Location
FLIGHT FOLLOW	1	Rx	158.0100		STATE
		Tx	158.6550		
NIMS	2	Rx	168.5500		NATIONAL
		Tx	168.5500		
FERN	3	Rx	154.2800		STATE
		Tx	154.2800		
MUTUL AID	4	Rx	154.8750		STATE
		Tx	154.8750		
SCENE	5	Rx	168.4000		STATE
		Tx	168.4000		
NC FIRE	6	Rx	156.7450		LOCAL
		Tx	156.7450		
NC TAC	7	Rx	154.4300		LOCAL
		Tx	154.4300		
NC PARKS	8	Rx	156.8850		LOCAL
		Tx	156.8850		
CAD BASE	9	Rx	168.3000		LOCAL
		Tx	168.3000		
PBT RPTR	10	Rx	168.3000		LOCAL
		Tx	171.7250	110.9	
LAR PK FS	11	Rx	164.1500		LOCAL
		Tx	169.1000	123.0	
JC SHERF	12	Rx	156.0750		LOCAL
		Tx	156.0750		
ARSND 07	13	Rx	168.6750		STATE
		Tx	168.6750		
LAR PK BLM	14	Rx	168.3000		LOCAL
		Tx	171.7250	131.8	
EMPTY	15	Rx			
		Tx			
Air Guard (Emergency)	16	Rx	168.6750		State Wide
		Tx	168.6750		

Zone: FIRE 11
Bank: FIRE

Eastern Zone BLM Fire Operations
RACAL Radio Frequencies & Locations
FIRE 2

Name	Channel		Frequency	Tone	Location
FLIGHT FOLLOW	1	Rx	168.6500		STATE
		Tx	168.6500		
NIMS	2	Rx	168.5500		NATIONAL
		Tx	168.5500		
FERN	3	Rx	154.2800		STATE
		Tx	154.2800		
MUTUL AID	4	Rx	154.8750		STATE
		Tx	154.8750		
SCENE	5	Rx	168.4000		STATE
		Tx	168.4000		
JC FIRE	6	Rx	155.1450		LOCAL
		Tx	155.1450		
BH NF	7	Rx	169.9250		LOCAL
		Tx	169.9250		
BH NF MEADOWLK RPT	8	Rx	169.9250	110.9	LOCAL
		Tx	170.5250	136.5	
CAD BASE	9	Rx	168.3000		LOCAL
		Tx	168.3000		
PMPK ST RPT	10	Rx	168.3000		LOCAL
		Tx	171.7250	110.9	
POLE MTN RPT	11	Rx	168.3000		LOCAL
		Tx	171.7250	136.5	
JC SHERIF	12	Rx	155.0700		LOCAL
		Tx	155.0700		
AIRGND 27	13	Rx	168.6750		STATE
		Tx	168.6750		
EMPTY	14	Rx			
		Tx			
EMPTY	15	Rx			
		Tx			
Air Patrol (Emergency)	16	Rx	168.6250		State Wide
		Tx	168.6250		

Zone: FIRE 12
Bank: FIRE

Eastern Zone BLM Fire Operations
RACAL Radio Frequencies & Locations
FIRE 3

Name	Channel		Frequency	Tone	Location
FLIGHT FOLLOW	1	Rx	168.6500		STATE
		Tx	168.6500		
NIMS	2	Rx	166.5500		NATIONAL
		Tx	166.5500		
FERN	3	Rx	154.2800		STATE
		Tx	154.2800		
MUTUL AID	4	Rx	154.8750		STATE
		Tx	154.8750		
SCENE	5	Rx	168.4000		STATE
		Tx	168.4000		
CC FIRE	6	Rx	153.9500	167.9	LOCAL
		Tx	153.4100	167.9	
CC N RPT	7	Rx	153.9500	167.9	LOCAL
		Tx	154.4150	162.2	
CC S RPT	8	Rx	153.9500	167.9	LOCAL
		Tx	154.4150	131.8	
CAD BASE	9	Rx	168.3000		LOCAL
		Tx	168.3000		
PMPK ST RPT	10	Rx	168.3000		LOCAL
		Tx	171.7250	110.9	
WARREN PK RPT	11	Rx	168.3000		LOCAL
		Tx	171.7250	123.0	
LARAMIE PK RPT FS	12	Rx	164.1500		LOCAL
		Tx	166.1500	123.0	
AIRGND 3	13	Rx	172.3250		STATE
		Tx	172.3250		
LARAMIE PK RPT BLM	14	Rx	168.3000		LOCAL
		Tx	171.7250	131.8	
EMPTY	15	Rx			
		Tx			
Air Guard (Emergency)	16	Rx	168.6250		State Wide
		Tx	168.6250		

Zone: FIRE 13
Bank: FIRE

Eastern Zone BLM Fire Operations
RACAL Radio Frequencies & Locations
FIRE 4

Name	Channel		Frequency	Tone	Location
FLIGHT FOLLOW	1	Rx Tx	[illegible]		STATE
NIMS	2	Rx Tx	[illegible]		NATIONAL
FERN	3	Rx Tx	[illegible]		STATE
MUTUL AID	4	Rx Tx	[illegible]		STATE
SCENE	5	Rx Tx	[illegible]		STATE
NF WORK 1	6	Rx Tx	[illegible]	110.9	LOCAL
NF WORK 2	7	Rx Tx	[illegible]	110.9	LOCAL
RAWLINS BASE	8	Rx Tx	[illegible]		LOCAL
CAD BASE	9	Rx Tx	[illegible]		LOCAL
ELK MTN RPT	10	Rx Tx	[illegible]	110.9	LOCAL
WHISKEY PK RPT	11	Rx Tx	[illegible]	146.2	LOCAL
LARAMIE PK RPT FS	12	Rx Tx	[illegible]	110.9	LOCAL
AIRGND ZONE 2/7	13	Rx Tx	[illegible]		STATE
LARAMIE PK RPT BLM	14	Rx Tx	[illegible]	110.9	LOCAL
EMPTY	15	Rx Tx			
Air Guard (Emergency)	16	Rx Tx	168.6250 168.6250		State Wide

Zone: FIRE 14
Bank: FIRE

Eastern Zone BLM Fire Operations
RACAL Radio Frequencies & Locations
FIRE 5

Name	Channel		Frequency	Tone	Location
FLIGHT FOLLOW	1	Rx	[illegible]		STATE
		Tx	[illegible]		
NIMO	2	Rx	168.5500		NATIONAL
		Tx	168.5500		
FERN	3	Rx	154.2800		STATE
		Tx	154.2800		
MUTUL AID	4	Rx	154.8750		STATE
		Tx	154.8750		
SCENE	5	Rx	168.4000		STATE
		Tx	168.4000		
BH NF	6	Rx	169.5750		LOCAL
		Tx	169.5750	110.9	
BH NF MEADOWLK RPT	7	Rx	169.5750	110.9	LOCAL
		Tx	170.5750	136.5	
WOPLAND BASE	8	Rx	168.5750		LOCAL
		Tx	168.5750		
CAD BASE	9	Rx	168.3000		LOCAL
		Tx	168.3000		
POLE MT RPT	10	Rx	[illegible]		LOCAL
		Tx	171.7250	136.5	
BLK MT RPT	11	Rx	168.5250		LOCAL
		Tx	171.4250	110.9	
CODY RPT	12	Rx	168.5250		LOCAL
		Tx	171.4250	123.0	
ARGOND ZONE 07	13	Rx	168.5750		STATE
		Tx	168.5750		
LARAMIE PK RPT BLM	14	Rx	168.3000		LOCAL
		Tx	171.7250	131.8	
EMPTY	15	Rx			
		Tx			
AT Guard (Emergency)	16	Rx	168.6750		State Wide
		Tx	168.6750		

Zone: FIRE 15
Bank: FIRE

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Eastern Zone BLM Fire Operations

RACAL Radio Frequencies & Locations

FIRE 0

Name	Channel	Frequency	Tone	Location
FLIGHT FOLLOW	1	Rx [illegible] Tx [illegible]		STATE
NIMO	2	Rx [illegible] Tx [illegible]		NATIONAL
FERN	3	Rx [illegible] Tx [illegible]		STATE
MUTUAL AID	4	Rx [illegible] Tx [illegible]		STATE
SCENE	5	Rx [illegible] Tx [illegible]		STATE
NATIONAL CD FIRE	6	Rx [illegible] Tx [illegible]		LOCAL
MC TAC	7	Rx [illegible] Tx [illegible]		LOCAL
MC FARMS	8	Rx [illegible] Tx [illegible]		LOCAL
CAD BASE	9	Rx [illegible] Tx [illegible]		LOCAL
PUMPKIN ST RPT	10	Rx [illegible] Tx [illegible]	[illegible]	LOCAL
JC FIRE	11	Rx [illegible] Tx [illegible]		LOCAL
GLENROCK	12	Rx [illegible] Tx [illegible]	[illegible]	LOCAL
AIRGND 224.0 07	13	Rx [illegible] Tx [illegible]		STATE
LADAME PK RPT BLM	14	Rx [illegible] Tx [illegible]	[illegible]	LOCAL
CD FIRE	15	Rx [illegible] Tx [illegible]	167.9 167.9	LOCAL
AT Guard (Emergency)	16	Rx [illegible] Tx [illegible]		State Wide

Zone: FIRE 16
Mark: FIRE

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Wyoming BLM Fire Operations
RACAL Radio Frequencies & Locations

Name	Channel	Frequency	Tone	Location
	1	Rx Tx		
	2	Rx Tx		
	3	Rx Tx		
	4	Rx Tx		
	5	Rx Tx		
	6	Rx Tx		
	7	Rx Tx		
	8	Rx Tx		
	9	Rx Tx		
	10	Rx Tx		
	11	Rx Tx		
	12	Rx Tx		
	13	Rx Tx		
	14	Rx Tx		
	15	Rx Tx		
	16	Rx Tx		

(INCIDENT NAME)

(INCIDENT DATE/TIME)

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Wyoming BLM Fire Operations

RACAL Radio Frequencies & Locations

(LOCATION)

Name	Channel		Frequency	Tone	Location
	1	Rx			
		Tx			
	2	Rx			
		Tx			
	3	Rx			
		Tx			
	4	Rx			
		Tx			
	5	Rx			
		Tx			
	6	Rx			
		Tx			
	7	Rx			
		Tx			
	8	Rx			
		Tx			
	9	Rx			
		Tx			
	10	Rx			
		Tx			
	11	Rx			
		Tx			
	12	Rx			
		Tx			
	13	Rx			
		Tx			
	14	Rx			
		Tx			
	15	Rx			
		Tx			
	16	Rx			
		Tx			

(INCIDENT NAME)

(INCIDENT DATE(S))

Wyoming BLM Fire Operations

RACAL Radio Frequencies & Locations

(LOCATION)

Name	Channel		Frequency	Tone	Location
	1	Rx			
		Tx			
	2	Rx			
		Tx			
	3	Rx			
		Tx			
	4	Rx			
		Tx			
	5	Rx			
		Tx			
	6	Rx			
		Tx			
	7	Rx			
		Tx			
	8	Rx			
		Tx			
	9	Rx			
		Tx			
	10	Rx			
		Tx			
	11	Rx			
		Tx			
	12	Rx			
		Tx			
	13	Rx			
		Tx			
	14	Rx			
		Tx			
	15	Rx			
		Tx			
	16	Rx			
		Tx			

(INCIDENT NAME)

(INCIDENT DATE(S))

Wyoming BLM Fire Operations
RACAL Radio Frequencies & Locations

(LOCATION)

Name	Channel		Frequency	Tone	Location
	1	Rx			
		Tx			
	2	Rx			
		Tx			
	3	Rx			
		Tx			
	4	Rx			
		Tx			
	5	Rx			
		Tx			
	6	Rx			
		Tx			
	7	Rx			
		Tx			
	8	Rx			
		Tx			
	9	Rx			
		Tx			
	10	Rx			
		Tx			
	11	Rx			
		Tx			
	12	Rx			
		Tx			
	13	Rx			
		Tx			
	14	Rx			
		Tx			
	15	Rx			
		Tx			
	16	Rx			
		Tx			

(INCIDENT NAME)

(INCIDENT DATE(S))

Wyoming BLM Fire Operations

RACAL Radio Frequencies & Locations

(LOCATION)

Name	Channel		Frequency	Tone	Location
	1	Rx			
		Tx			
	2	Rx			
		Tx			
	3	Rx			
		Tx			
	4	Rx			
		Tx			
	5	Rx			
		Tx			
	6	Rx			
		Tx			
	7	Rx			
		Tx			
	8	Rx			
		Tx			
	9	Rx			
		Tx			
	10	Rx			
		Tx			
	11	Rx			
		Tx			
	12	Rx			
		Tx			
	13	Rx			
		Tx			
	14	Rx			
		Tx			
	15	Rx			
		Tx			
	16	Rx			
		Tx			

(INCIDENT NAME)

(INCIDENT DATE(S))

Wyoming BLM Fire Operations
RACAL Radio Frequencies & Locations

Name	Channel		Frequency	Tone	Location
	1	Rx			
		Tx			
	2	Rx			
		Tx			
	3	Rx			
		Tx			
	4	Rx			
		Tx			
	5	Rx			
		Tx			
	6	Rx			
		Tx			
	7	Rx			
		Tx			
	8	Rx			
		Tx			
	9	Rx			
		Tx			
	10	Rx			
		Tx			
	11	Rx			
		Tx			
	12	Rx			
		Tx			
	13	Rx			
		Tx			
	14	Rx			
		Tx			
	15	Rx			
		Tx			
	16	Rx			
		Tx			

(INCIDENT NAME)

(INCIDENT DATE(S))

Wyoming BLM Fire Operations

RACAL Radio Frequencies & Locations

(LOCATION)

Name	Channel		Frequency	Tone	Location
	1	Rx			
		Tx			
	2	Rx			
		Tx			
	3	Rx			
		Tx			
	4	Rx			
		Tx			
	5	Rx			
		Tx			
	6	Rx			
		Tx			
	7	Rx			
		Tx			
	8	Rx			
		Tx			
	9	Rx			
		Tx			
	10	Rx			
		Tx			
	11	Rx			
		Tx			
	12	Rx			
		Tx			
	13	Rx			
		Tx			
	14	Rx			
		Tx			
	15	Rx			
		Tx			
	16	Rx			
		Tx			

(INCIDENT NAME)

(INCIDENT DATE(S))

Wyoming BLM Fire Operations
RACAL Radio Frequencies & Locations

Name	Channel		Frequency	Tone	Location
	1	R T			
	2	R T			
	3	R T			
	4	R T			
	5	R T			
	6	R T			
	7	R T			
	8	R T			
	9	R T			
	10	R T			
	11	R T			
	12	R T			
	13	R T			
	14	R T			
	15	R T			
	16	R T			

(INCIDENT NAME)

(INCIDENT DATES)

Aviation User Checklist

- Pilot's Card–qualified and current for aircraft type and mission?
- Aircraft Card–aircraft approved for mission?
- Flight Plan/Following–filed (FAA/Agency/ Bureau)?
- Personal Protective Equipment (PPE)–required for missions–available and worn by all passengers and pilot?
- Pilot briefed on Mission Objectives/Parameters of Flight and Known Flight Hazards?
- Pilot briefing to passengers including:
  - Aircraft approach and departure paths
  - Seat belt – use and adjustment
  - Smoking rules
  - Fire extinguisher(s) – location and use
  - Emergency exits – location and use
  - Survival equipment – location and use
  - Oxygen (if available) – location and use
  - ELT – location and use
  - Other emergency procedures, i.e. fuel and electric shut-off
  - Radio operations
  - Equipment or tools – NEVER store under seats while transporting passengers

Aviation Watch Out Situations

- Is this flight necessary?
- Who is in charge?
- Are all hazards identified and have you made them known?
- Should you stop the operation or flight due to change in conditions?
  Communications? Weather?
  Confusion? Turbulence?
  Conflicting Priorities? Personnel?
- Is there a better way to do it?
- Are you driven by an overwhelming sense of urgency?
- Can you justify your actions?
- Are there other aircraft in the area?
- Do you have an escape route?
- Are there any rules being broken?
- Are communications getting tense?
- Are you deviating from the assigned operation or flight?

///

Flight Manager

The Flight Manager (FM) is supervised by the sending unit dispatcher until destination is reached. The FM is responsible for all personnel assigned on the manifest list. Duties are:

- To explain to all personnel at the beginning of travel, transportation arrangements, type equipment, route of travel, stopping points, ETAs, etc.
- To have multiple copies of manifests covering all personnel.
- To ensure proper flight following procedures are met.
- To have the telephone numbers of the sending and receiving dispatchers' offices when delays of more than 30 minutes occur in order to give information as to why and how long the delay will be.
- To have all personnel within the weight limitations, assembled, ready to board transportation.
- To provide for safety and welfare of each person assigned to the manifest list.
- To ensure saws and other fuel containers are purged prior to loading.
- To ensure no fuel- or lubricant-soaked items including clothing, chaps or bags are transported by aircraft.
- To check pilot card and aircraft data card for currency and qualifications.
- To ensure all passengers arrive at their destination.
- To sign the Daily Flight report/invoices.
- To ensure all personnel have a copy of their resource order with request number and position assigned.
- For Canadian travel, to ensure proper documentation is included as outlined in the Canadian/United States Operating Agreement (chapter 40).

Flight Following

Flight following, resource tracking, and communications are key components in employee and aircraft mission safety and efficiency. Flight following, whether performed from a dispatch office or other facility, or at a remote location in the field, must be given a high priority by all personnel involved.

Identification of flight following requirements:
At the time the flight is planned, flight following requirements should be clearly identified. Requirements should identify check-in procedures, including time and locations, dispatch office(s) or other flight following facilities involved, individuals responsible for flight following, frequencies to be used, and any special circumstances requiring check- ins (for example, to military facilities within Special Use Airspace).

Check-In Requirements:
Check-in intervals or times must be specified in the agency's flight following procedures. Check-ins must be documented and provide enough information so that the aircraft can be easily located if it is overdue or missing.

Failure to Meet Check-In Requirements:
The dispatch or other flight following facility shall implement response procedures for overdue or missing aircraft.

Helicopter Passenger Briefing

All passengers must receive a safety briefing prior to flight.

PPE - PROPER USE

- Hardhat/helmet (fixing, chinstrap)
- Nomex clothing (sleeves down, collar up)
- Leather boots and gloves.

NORMAL PROCEDURES

- **Entry and exit of aircraft**
  - Portable radio turned off
  - Approach-Departure (crouch-do not run)
  - Stay away from tail rotor
  - Approach/Exit downslope
  - As directed by pilot/helitack personnel
- **Seating in aircraft**
  - No movement inside aircraft once seated
  - Keep seatbelt fastened
  - Keep gloves and chinstraps on
- **No smoking**
- **Wait for helitack personnel to unload**
  - Leave doors closed
  - Do not unbuckle seatbelt until directed by pilot or helitack personnel
- **Loading/Unloading tools and equipment**
  - Always carry long-handled tools/equipment parallel to ground/never on shoulder
  - Secure any loose items inside cabin
  - All tools and equipment loaded/unloaded by helitack personnel
  - HazMat regulations/precautions

EMERGENCY PROCEDURES

- **Follow directions from pilot/helitack personnel**
- **Location and use of:**
  - Crash positions (demonstrate)
  - Fire Extinguisher
  - Survival Kit
  - Emergency Exits
  - First-Aid Kit
  - ELT/portable radios
- **Depart helicopter only after rotor blades have stopped**

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Personal Protective Equipment for Flight

Agencies have personal protective equipment (PPE) requirements for most flights. When in doubt, WEAR IT.

- Above-the-ankle leather boots 8" or higher, and no metal against the skin.
- Nomex pants and shirt or flight suit buttoned or zipped to the top, collar turned up, sleeves rolled down. Pants cover the boot tops.
- Nomex or leather gloves.
- Non-synthetic (cotton, wool) outer and undergarments.
- Approved flight helmet or hard hat with chin strap (hard hats apply only to helicopter crew shuttle operations). Eye protection should be worn during takeoffs and landings. Wear eye protection when working around helicopters.
- Approved hearing protection.

Helicopter Landing Area Selection

Choosing a Landing Area:

- Locate a reasonably flat area.
- Choose an area clear of people, vehicles, obstructions such as trees, poles, and especially overhead wires. The area must be free of stumps, brush, posts, large rocks or anything over 18 inches high.
- Consider the wind direction. Helicopters land and take off into the wind. Choose an approach free of obstructions.
- Any obstruction should be relayed to the helicopter crew on initial radio contact.
- Remove or secure any loose items in and around the landing area such as trash, blankets, hats or equipment.
- Wet down the landing area if dusty conditions are present.

FIXED HELISPOTS

Type I Helicopters

- Safety circle 110 feet
- Touchdown pad 30 feet x 30 feet clear and level

Type II Helicopters

- Safety circle 90 feet
- Touchdown pad 20 feet x 20 feet clear and level

Type III Helicopters

- Safety circle 75 feet
- Touchdown Pad 15 feet x 15 feet clear and level

ITEMS NEEDED:

- Twenty (20) lb. fire extinguisher
- Wind Indicator
- Radio-compatible with helicopter
- Pad Marker
- Allowable Payloads (HOGE & HOGE) for all helicopters using helispot
- Passenger/Cargo Manifest Book
- Dust abatement, as needed

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Longline Mission

- All individuals involved in longline missions will be certified annually by an instructor qualified in longline operations.
- If you are on the receiving end or the backhaul end of a longline load, you must be able to communicate to the pilot where you want the load delivered or picked up.
- Use a signal mirror to identify your position to the pilot.
- The drop-off/pick-up area should be as open and free of obstacles as possible. It is extremely difficult to hover straight down between tall trees.
- Once you have contacted the pilot by radio, give him/her all the information you can (cargo weight, wind speed and direction, etc.)
- Mark the drop-off spot with flagging (large "X" on the ground) if possible.
- Keep pilot informed of load status (height above the ground, clear of obstacles, etc.)
- Let the hook land on the ground before attaching load.
- If the electrical release does not release the load, you must manually release it; wait until the hook lands on the ground before releasing.
- For ALL backhaul, a "swivel" must be connected to the cargo/longline hook. NO EXCEPTIONS! (when you request nets, request swivels also).
- Load cargo net with heavy items in the center, light items on top. Tape all boxes and loose items.
- Pull the "purse strings" of the cargo net to equal length and attach a swivel to the steel rings. It's not necessary to "cross" the purse strings with an overhand wrap. The preferred method is to make an oversized collar out of fiber tape that will slip down the purse trings as the load is lifted.

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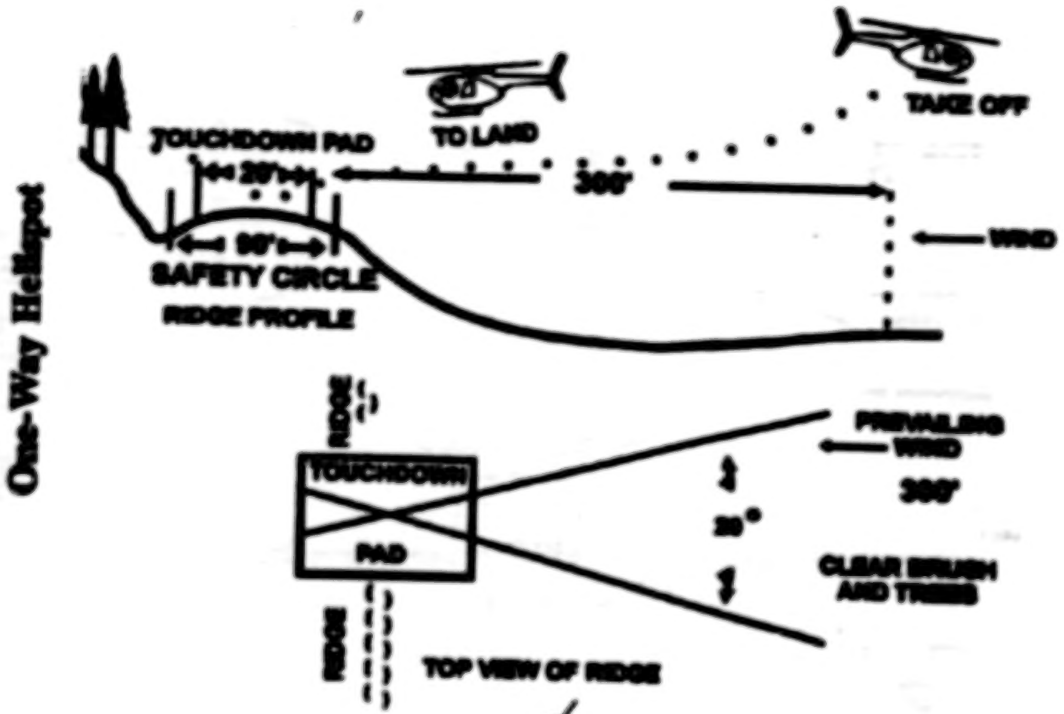
One-Way Heliport
TOUCHDOWN PAD
TO LAND
TAKE OFF
300'
WIND
SAFETY CIRCLE
RIDGE PROFILE
RIDGE
TOUCHDOWN
PAD
PREVAILING
WIND
300'
20°
CLEAR BRUSH
AND TREES
RIDGE
TOP VIEW OF RIDGE

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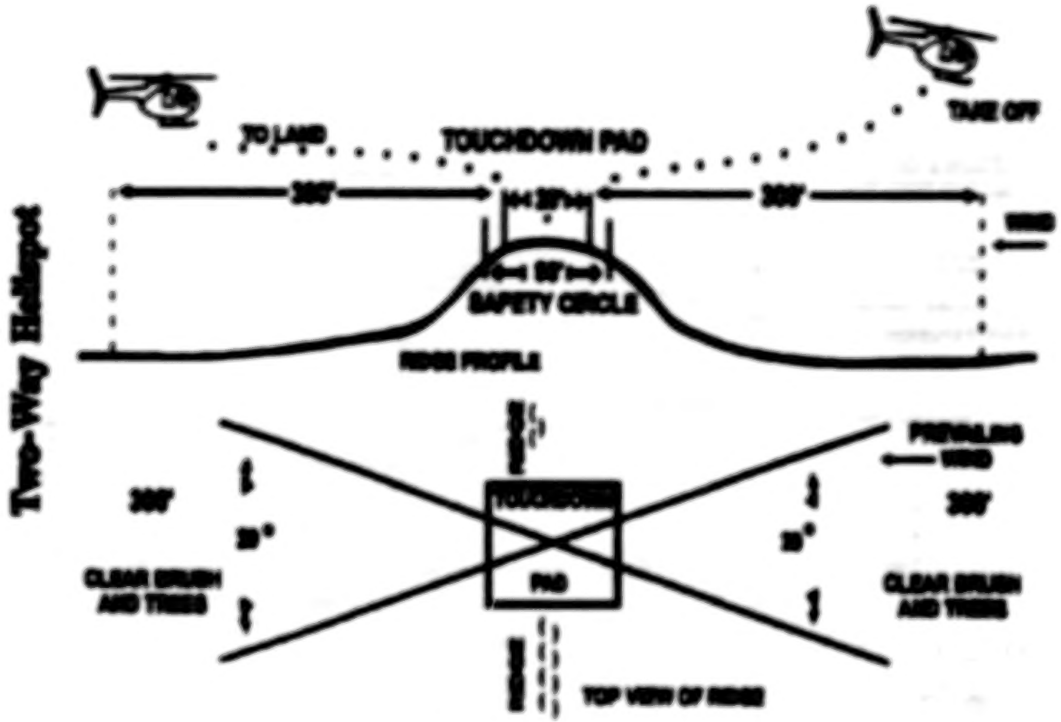
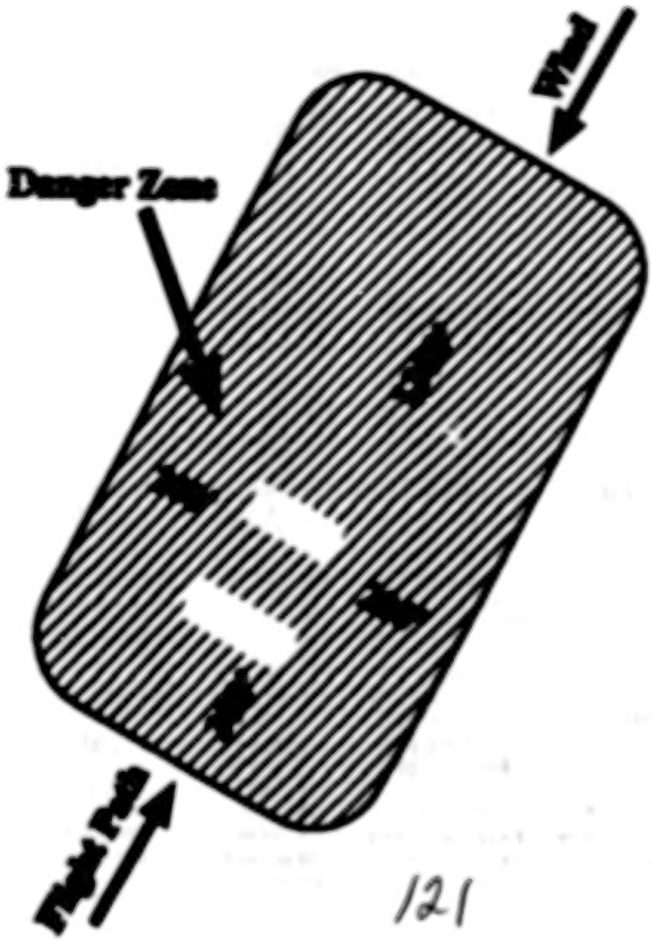

Two-Way Helispot
TOUCHDOWN PAD
TAKE OFF
SAFETY CIRCLE
RIDGE PROFILE
PREVAILING WIND
CLEAR BRUSH AND TREES
CLEAR BRUSH AND TREES
TOP VIEW OF RIDGE

Helicopter Hand Signals

Parachute Drop Zone



Paracargo and Aerial Retardant Operations Safety

The paracargo danger zone is a strip of 200 feet on each side of the flight path, 300 feet in the direction of approach, and 1300 feet in the direction of the aircraft when it leaves the target. The following should be observed at all times:

- Mark target area with white or orange "T" in open or cleared area with top of "T" into the wind. Erect paper streamer or flagging on long pole to indicate wind direction.
- An individual should be in charge at drop site.
- All persons, vehicles, and animals should be cleared from the danger zone prior to arrival of the cargo aircraft.
- Camps should be at least 600 feet from target area and outside of danger zone.
- Allow no one in danger zone until drop is complete.
- Beware of "streamers" or parachutes that don't open.

Personnel can be injured by the impact of material dropped by aircraft. Clear personnel out of target area when drop is to be made. If you can't escape:

- Hold your handtool away from your body.
- Lie face down with head toward oncoming aircraft and hardhat in place. Grasp something firm to prevent being carried or rolled about by the dropped liquid.
- Do not run unless escape is assured.
- Get clear of dead snags, tops and limbs in drop area.
- Working in an area covered by wet retardant should be done with caution due to slippery surfaces.

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Weight Estimates

(use only if scale is not available)

Item	Weight
Blevet bag	15 lbs.
Backpack pump (full)	45 lbs.
Cargo net 12x12	20 lbs.
Cargo net 20x20	45 lbs.
Cargo net (fish net)	5 lbs.
Cargo hook (1 hook)	35 lbs.
Jerry can/fuel (5 gal.)	45 lbs.
Canteen (1 gal.)	10 lbs.
Dolmar (full)	15 lbs.
Drip torch (full)	15 lbs.
Fusee (1 case)	36 lbs.
Hand tool (each)	8 lbs.
Lead line (12 ft.)	10 lbs.
Long line (50 ft.)	30 lbs.
Swivel	5 lbs.
Chainsaw	25 lbs.
Hose, 1 1/2" SYN. 100'	23 lbs.
Hose, 1" SYN. 100'	11 lbs.
Hose, 3/4" SYN (1000'/case)	30 lbs.
Hose, suction, 8 ft.	10 lbs.
Mark 3 - Pump w/kit	150 lbs.
Stokes w/ backbrd.	40 lbs.
Trauma bag	35 lbs.
M.R.E., 1 case	25 lbs.
Cubee/water (5 gal.)	40 lbs.

USFS Visual Signal Code

Ground To Air

Require doctor, serious injury	—
Able to ride horse	2
Need stretcher crew	3
Broken leg	4
Broken arm	5
Broken back	6
Head injury	±
Puncture wound	8
Unable to diagnose	9
Jumper OK	L
Personnel OK	LL
Fire adequately staffed	≡
Change jump spot	J
Cargo drop target	T
Helicopter landing spot	H
Need cross-cut saw	S
Need power saw	SS
Need climbers	O
Need drinking water	U
Need food	F
Need radio with batteries	R
Need batteries for radio	RR
Need power pump outfit	PP
Received message	Wave streamer

Air to Ground

Received message	Rock plane
Fire here	Circle three times over spot
Will drop message	Gun motor three times

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PAGE

Recommended Enterplant Coverage Levels

A.L.S.	1	1	(10-15)	Annual & perennial western grasses: tundra
C	2			Conifer with grass
D.D.	8	2	(51-200)	Shortgrass mixed prairie: western hardwood
E.P.U.	9			Longgrass prairie: full hardwood
F	3			Ragbrush with grass
H	3	3	201-400	Savanna
P	5			Intermediate brush (grass)
R.	11			Light slash
G	10	4	401-600	Shortgrass prairie (heavy dead litter)
O		5	601-800	Bottom rough
P.O.	6			Intermediate brush (cured): Alaska Black Spruce
S.O.	4	Greater	Greater	California mixed chaparral: high percent
J	12	More A	Over 800	Medium slash
I	13			Heavy slash

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Directing Retardant and Bucket Drops

- **Give general location** on incident.
- **Finalize location** with:
  - Clock direction - straight in front of the aircraft is 12 o'clock, out the right door is 3 o'clock, the tail is 6 o'clock, and the left door is 9 o'clock. When giving directions, remember that helicopters and air attack generally orbit in a right-hand pattern and air tankers in a left-hand pattern.
  - Position on slope - lower 1/3, upper 1/3, midslope, top of ridge, etc.
  - Aspect - direction slope is facing.
  - Describe prominent landmarks - don't say "I have a red hardhat, I'm wearing a yellow shirt, I'm waving, I'm by the big rock, "etc." Visualize what the pilot sees from the air and describe target.
  - Use signal mirrors - use smoke or fusee if mirror unavailable. Stand in drop location (when safe) for ID and move away before drop.
- **Describe target** from your location and explain mission. The pilot will decide drop technique and flight path.
- **Assure pilot** all personnel are safe and know aircraft intentions before the drop.
- **Give feedback** to pilot about drop accuracy. Be honest and constructive. Let pilot know if drop is early, late, uphill, downhilll, on target, too high, too low, etc. Report low drops immediately.

Phonetic Alphabet

	Law Enforcement	International
A	Adam	Alpha
B	Boy	Bravo
C	Charles	Charlie
D	David	Delta
E	Edward	Echo
F	Frank	Foxtrot
G	George	Golf
H	Henry	Hotel
I	Ida	India
J	John	Julliett
K	King	Kilo
L	Lincoln	Lima
M	Mary	Mike
N	Nora	November
O	Ocean	Oscar
P	Paul	Papa
Q	Queen	Quebec
R	Robert	Romeo
S	Sam	Sierra
T	Tom	Tango
U	Union	Uniform
V	Victor	Victor
W	William	Whiskey
X	X-Ray	X-Ray
Y	Young	Yankee
Z	Zebra	Zulu

Spot Weather Forecast

Spot weather forecasts should be requested for fires that have potential for extreme fire behavior or exceed initial attack or are located in areas for which Red Flag Warnings have been issued.

The basic elements of a Spot weather Forecast are:

Name of Fire or Other Project

Request Time and Date

Location by ¼ Section

Drainage Name

Exposure

Size

Elevation

Size

Elevation (top and bottom)

Fuel Type

Fire Characteristics, (ground, crown)

Weather Conditions
- Place
- Elevation
- Observation Time
- Wind Direction
- Wind Velocity
- Dry Bulb
- Wet Bulb
- Relative Humidity
- Remarks

NS Form 9-1 (3-73) Prev. Ed NWSM 9-41

FIRE WEATHER SPECIAL FORECAST REQUEST

U.S. Department of Commerce NOAA National Weather Se

(See reverse for instructions)

I - REQUESTING AGENCY WILL FURNISH:

1. NAME OF FIRE OR OTHER PROJECT | 2. REQUEST AGENCY | 3. REQUEST MADE: TIME | DATE

4. LOCATION (By L/A Sec - Sec - Twp - Range) | 5. NEAREST NAME | 6. EXPOSURE (NW, E-SE, etc.

7. SIZE OF PROJECT | 8. ELEVATION: TOP | BOTTOM | 9. FUEL TYPE | 10. PROJECT IS: ☐ GOING ☐ CROWNING

11. WEATHER CONDITIONS AT PROJECT OR FROM NEARBY STATIONS (See reverse)

PLACE	ELEVATION	ON TIME	WIND DIR-VEL	TEMP (In Shade) WET	DRY	RH	DP	REMARKS

12. SEND FORECAST TO | PLACE | VIA | ATTN: (Name)

II - FIRE WEATHER FORECASTER WILL FURNISH:

13. FORECAST AND OUTLOOK GENERAL DISCUSSION:

- TIME AND DATE:
- F.D.
- ST. OF SK
- TEMP.
- R.H.
- WIND
- 10,000 WIND:
- SMOKE DISP.:
- PRECIP.
- LAL

TONIGHT

- ST. OF SK
- TEMP.
- R.H.
- WIND
- 10,000 WIND:
- SMOKE DISP.:
- PRECIP.
- LAL

NAME OF FIRE WEATHER FORECASTER

OUTLOOK FOR TOMORROW

- ST. OF SK
- TEMP.
- R.H.
- WIND
- 10,000 WIND:
- SMOKE DISP
- PRECIP.
- LAL

FIRE WEATHER OFFICE

III - REQUESTING AGENCY WILL COMPLETE AND RECEIPT OF FORECAST

IV. FORECAST RECEIVED: | TIME | DATE | NAME

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Severe Fire Behavior Potential Related to Relative Humidity and Fuel Moisture Content

R.H. %	1 – 10ft F.M. %	10 – 100ft F.M. %	Relative ease of chance of ignition and spotting; general burning conditions.
> 60	> 20	> 15	Very little ignition; some spotting may occur with winds above 9 mi./hr.
45 – 60	15 – 19	12 – 15	Low ignition hazard – campfires become dangerous; glowing firebrands cause ignition when relative humidity is < 50 percent.
30 – 45	11 – 14	10 – 12	Moderate ignitability – matches always dangerous; "very" burning conditions.
20 – 40	8 – 10	8 – 9	High ignition hazard – matches always dangerous; occasional crowning, spotting caused by gusty winds; "moderate" burning conditions.
15 – 30	5 – 7	5 – 7	Quick ignition, rapid buildup, extensive crowning; any increase in wind causes increased spotting, crowning, loss of control; fire moves up hill of more ignition aerial fuels; long distance spotting in pine stands; dangerous burning conditions.
< 15	<5	<5	All sources of ignition dangerous; aggressive burning, spot fires occur often and spread rapidly, extreme fire behavior probable; critical burning conditions.

LIGHTNING ACTIVITY LEVELS

1	NO THUNDERSTORMS.
2	FEW BUILDING CUMULUS WITH ISOLATED THUNDERSTORMS.
3	MUCH BUILDING CUMULUS WITH SCATTERED THUNDERSTORMS. LIGHT TO MODERATE RAIN REACHES THE GROUND.
4	THUNDERSTORMS COMMON BUT DO NOT OBSCURE THE SKY. MODERATE RAIN REACHES THE GROUND.
5	THUNDERSTORMS COMMON AND OCCASIONALLY OBSCURE THE SKY. MODERATE TO HEAVY RAIN REACHES THE GROUND.
6	SAME AS 3 BUT DRY. NO RAIN.

POTENTIAL FOR LARGE FIRE GROWTH (HAINES INDEX)

2-3	VERY LOW
4	LOW
5	MODERATE
6	HIGH

FIRE BEHAVIOR FUEL MODEL DESCRIPTIONS

- **Grass Group**

Fuel Model 1 (1 foot deep) Fire spread is governed by the fine herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through cured grass and associated material. Very little shrub or timber is present, generally less than one third of the area.

Grasslands and savanna are represented along with stubble grass-tundra, and grass-shrub combinations that meet the above area constraint. Annual and perennial grasses are included in this fuel model.

Fuel Model 2 (1 foot deep) Fire spread is primarily through the fine herbaceous fuels, either curing or dead. These are surface fires where the herbaceous material, besides litter and dead-down stem wood from the open shrub or timber overstory, contribute to the fire intensity. Open shrub lands and pine stands or scrub oak stands that cover 1/3 to 2/3 of the area may generally fit this model but may include clumps of fuels that generate higher intensities and may produce firebrands. Some pinyon-juniper may be in this model.

Fuel Model 3 (2.5 feet deep) Fires in this fuel are the most intense of the grass group and display high rates of spread under the influence of wind. The fire may be driven into the upper heights of the grass stand by the wind and cross over standing water. Stands are tall, averaging about 3 feet, but considerable variation may occur. Approximately one-third or more of the stand is considered dead or cured and maintains the fire.

- Shrub Group

Fuel Model 4 (6 feet deep) Fire intensity and fast spreading fires involve the foliage and live and dead fine woody materials in the crowns of a nearly continuous secondary overstory. Examples are stands of mature shrub, 6 or more feet tall, such as California mixed chaparral, the high pocosins along the east coast, the pine barrens of New Jersey or the closed jack pine stands of the north-central states. Besides flammable foliage, there is dead woody material in the stand that significantly contributes to the local conditions. There may be also a deep litter layer that confounds suppression efforts.

Fuel Model 5 (2 feet deep) Fire is generally carried in the surface fuels made up of litter cast by the shrubs and the grasses or forbs in the understory. Fire are generally not very intense as surface fuel loads are light, the shrubs are young with little dead material, and the foliage contain little volatile material. Shrubs are generally not tall, but nearly cover the entire area. Young, green stands with little or no deadwood such as laurel, vine maple, alder, or even chaparral, manzanita, or chamise are examples. As the shrub fuel moisture drops, consider using a Fuel Model 6.

Fuel Model 6 (2.5 feet deep) Fires carry through the shrub layer where the foliage is more flammable than Fuel Model 5, but require moderate winds (>8 mph) at midflame height. Fire will drop to the ground at low windspeeds or openings in the stand. Shrubs are older, but not as tall as shrub types of Model 4, nor do they contain as much fuel as Model 4. A broad range of shrub conditions is covered in this model. Typical examples include intermediate stands of chamise, chaparral, oak brush, low pocosins, Alaskan spruce taiga, and shrub tundra. Cured hardwood slash can be considered. Pinyon-juniper shrublands may fit, but may over predict rate of spread except at high winds; e.g., 20 mph at the 20-foot level.

Fuel Model 7 (2.5 feet deep) Fire burns through the surface and shrub strata equally. Fire can occur at higher dead fuel moisture contents due to the flammable nature of live foliage. Shrubs are generally 2 to 6 feet high. Examples are Palmetto-gallberry understory-pine over-story sites, low pocosins, and Alaska Black Spruce-shrub combinations.

- Timber Litter Group

Fuel Model 8 (0.2 feet deep) Slow burning ground fires with low flame heights are generally the case, although an occasional "jackpot" or heavy fuel concentration may cause a flare up. Only under severe weather conditions do these fuels pose fire problems. Closed-canopy stands of short needle conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mainly needles, leaves, and some twigs since little undergrowth is present in the stand. Representative conifer types are white pine, lodgepole pine, spruce, true fir, and larches.

Fuel Model 9 (0.2 feet deep) Fires run through the surface litter faster than model 8 and have higher flame height. Both long-needle conifer and hardwood stands, especially the oak-hickory types, are typical. Fall fires in hardwoods are representative, but high winds will actually cause higher rates of spread than predicted because of spotting caused by rolling and blowing leaves. Closed stands of long-needled pine like ponderosa, Jeffery, and red pines or southern pine plantations are grouped in this model. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crowning activity.

Fuel Model 10 (1 foot deep) The fire bum in surface and ground fuels with greater intensity than other timber litter models. Dead-down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation leading to potential fire control difficulties. Any forest type may be considered when heavy down materials are present; examples are insect or diseased stands, wind-thrown stands, over-mature situations with deadfish, and cured light thinning or partial-cut slash.

- Logging Slash Group

Fuel Model 11 (1 foot deep): Fires are fairly active in the slash and herbaceous material intermixed with the slash. The spacing of the rather light fuel load, shading from overstory, or the aging of the fine fuels can contribute to limiting the fire potential. Light partial cuts or thinning operations in mixed conifer stands, hardwood stands, and southern rough harvests are considered. Clear-cut operations generally produce more slash than represented here. The < 3-inch material load is less than 12 tons per acre. The < 3-inch material is represented by not more than 10 pieces, 4-inches in diameter along a 50-foot transect.

Fuel Model 12 (2.3 feet deep): Rapidly spreading fires with high intensities capable of generating firebrands can occur. When fire starts, it is generally contained until a fuel break or change in fuels is encountered. The visual impression is dominated by slash and much of it is < 3-inches in diameter. These fuels total less than 35 tons per acre and seem well distributed. Heavy thinned conifer stands, clear-cuts and medium or heavy partial cuts are represented. The > 3-inch material is represented by encountering 11 pieces, 6-inches in diameter, along a 50-foot transect.

When working in Fuel Model 11 or 12 with significant "red" needles attached to limbs, considering using the next heavier model. For example Fuel Model 11 with "red" needles, use Fuel Model 12.

Fuel Model 13 (3 feet deep): Fire is generally carried by a continuous layer of slash. Large quantities of > 3-inch material is present. Flame spread quickly through the fine fuels and intensity builds up as the large fuels start burning. Active flaming is sustained for long periods and a wide variety of firebrands can be generated. These contribute to spotting problems as the weather conditions become more severe. Clear-cut and heavy partial-cuts in mature and over-mature stands are depicted where the slash load is dominated by the > 3-inch material. The total load may exceed 300 tons per acre, but the < 3-inch fuel is generally only 10 percent of the total load. Situations where the slash still has "red" needles attached, but the total load is lighter like a Model 12, can be represented because of the earlier high intensity and faster rate of spread.

Fire Behavior Terminology

Smoldering – no flame, barely spreading.
Creeping – low flame and slow spread.
Running – 'infinite flames, rapid spread in surface fuels, with well-defined head.
Torching – fire runs up ladder fuels into crowns of individual trees – no spread from crown to crown.
Crowning – fire spreading from crown to crown, either dependent or independent of the surface fire.
Flame Length – length from base to tip, not vertically.
Rate of Spread – chains per hour = feet per minute.

Fuel Observations

1 hour fuels – less than ¼ inch diameter.
10 hour fuels – ¼ inch at 1 inch diameter.
100 hour fuels – 1 to 3 inch diameter.
1000 hour fuels – greater than 3 inch diameter.

Average Perimeter in Chains

Perimeter in Chains		Perimeter in Chains		Perimeter in Chains	
Acres	Average	Acres	Average	Acres	Average
1	17	100	170	1,800	725
2	24	150	200	2,000	750
3	29	200	240	2,400	825
4	34	300	300	2,800	875
5	38	400	350	3,200	950
7	45	500	375	3,600	1,000
10	53	600	425	4,000	1,075
15	65	700	450	5,000	1,200
20	75	800	475	6,000	1,300
25	85	900	500	7,000	1,400
30	90	1,000	525	8,000	1,500
40	105	1,200	600	9,000	1,600
50	120	1,400	625	10,000	1,700
75	150	1,600	675	12,000	2,000

Windspeed Ranges

Frontal winds.....Too broad a range to be specific.
Foehn.....40 to 60 mph consensus; up to 90 mph reported at 20 ft.
Land breeze.....2 to 3 hours after sunset, 3 to 5 mph at 20 ft.
Pacific sea breeze.....10 to 15 mph at 20 ft.
Up-Valley winds.....10 to 15 mph, early afternoon and evening at 20 ft.
Upslope winds.....as high as 4 to 8 mph at midflame height.
Downslope winds.....3 to 6 mph at midflame height.

BEAUFORT SCALE FOR ESTIMATING 20-FT WINDSPEED		
Wind Class	Wind Speed (mph)	Nomenclature
1	<3	Very light – smoke rises nearly vertically. Leaves of quaking aspen in constant motion; small branches of bushes sway; slender branches and twigs of trees move gently; tall grass and weeds sway and bend with wind; wind vane barely moves.
2	4 – 7	Light – trees of pole size in the open sway gently; wind felt distinctly on face; loose scraps of paper move; wind flutters small flag.
3	8 – 12	Gentle breeze – trees of pole size in the open sway very noticeable; large branches of pole size trees in the open toss; tops of trees in dense stands sway; wind extends small flag; a few crested waves on lakes.
4	13 – 18	Moderate breeze- trees of pole size in the open sway vigorously; whole trees in dense stands sway noticeably; dust is raised on the road.
5	19 – 24	Fresh – branches are broken from trees; inconvenience is felt in walking against wind.
6	25 – 31	Strong – tree damage increases with occasional breaking of exposed tops and branches; progress impeded when walking against wind; light structural damage to buildings.
7	32 – 38	Moderate Gale – severe damage to tree tops; very difficult to walk into wind; significant structural damage occurs.
8	>39	Fresh Gale – surfaced strong limbs torn; human mass on all exposed objects, vegetation, buildings; canopy offers virtually no protection; wind flow is systematic in disturbing everything in its path.

Fire Size Class

Class	Size
A	0 – ¼ acre
B	¼ – 9 acres
C	10 – 99 acres
D	100 – 299 acres
E	300 – 999 acres
F	1000 – 4999 acres
G	5000+ acres

RESOURCE VALUES

TIMBER

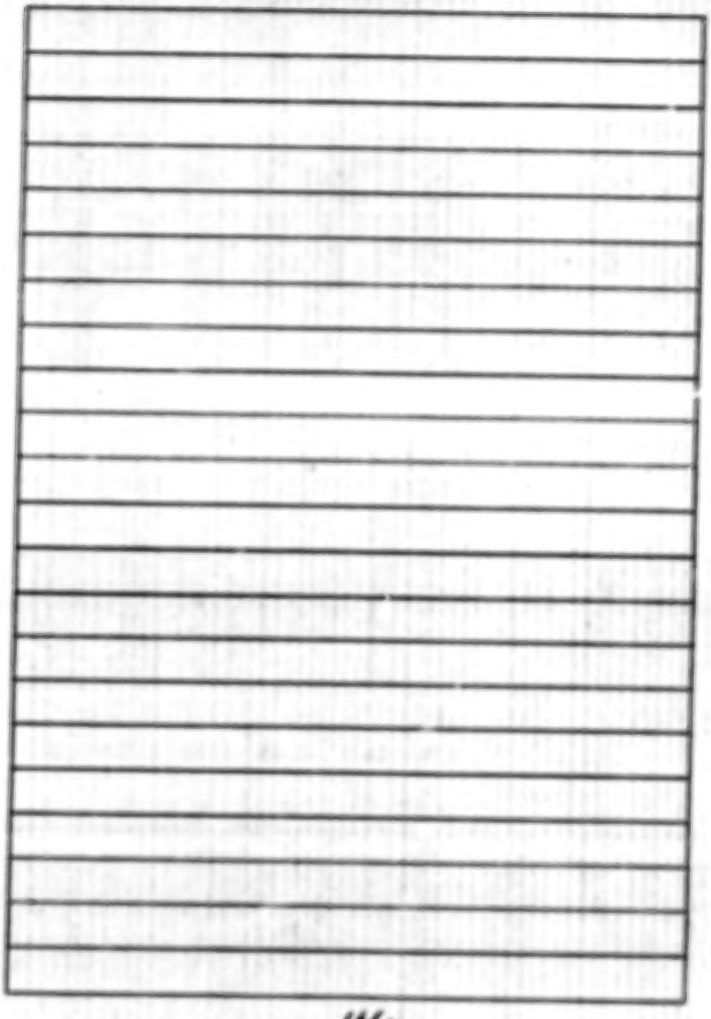
FIL	1	2	3	4
Timber	4.50	10.00	10.00	10.00
Forage	94.00	112.00	154.00	197.00
Water	0	0	0	0
Fish Habitat	1.30	2.50	3.60	4.70
Wildlife Habitat	3.40	10.20	10.20	16.30
Recreation	5.00	10.00	15.00	20.00
Improvement	.30	1.00	2.00	5.00
TOTAL	108.50	145.70	194.80	253.00

SAGE/ GRASS

FIL	1	2	3	4	5	6
Timber	0	0	0	0	0	0
Forage	2.00	3.00	4.00	5.00	7.00	10.00
Water	0	0	0	0	0	0
Fish Habitat	.20	.40	.60	.80	1.05	1.25
Wildlife Habitat	3.40	7.00	10.50	14.00	17.40	21.00
Recreation	.40	1.00	1.20	1.50	1.70	2.00
Improvement	.30	1.00	2.00	5.00	10.00	12.00
TOTAL	6.30	12.40	18.30	26.30	37.15	46.25

BURNING INDEX	0-20	21-40	41-60	61-80	81-100	101+
FIRE INTENSITY LEVEL	1	2	3	4	5	6

NOTES



RESOURCE TYPING

Engines

Components	Minimum Standards for Type						
	1	2	3	4	5	6	7
Pump Capacity (GPM)	1000	500	120	70	50	50	20
Tank Capacity (Gallons)	400	400	300	750	500	300	125
Hose, 2 ½" (feet)	1200	1000	–	–	–	–	–
Hose, 1 ½" (feet)	400	500	1000	300	300	300	300
Hose, 1" (feet)	300	300	800	300	300	300	300
Ladder (feet)	20	20	–	–	–	–	–
Heavy Stream (GPM)	500	–	–	–	–	–	–
Personnel (minimum number)	4	3	3	3	3	2	2

Note: An "S" after the type number denotes all-wheel drive.

Other Resources

Resource	Components	Minimum Standards for Type			
		1	2	3	4
Water Tender	Pump, GPM Tank, Gallons	300 5000	200 2500	200 1000	– 1000
Helicopters	Seats, including pilot (minimum)	14	10	7	3
	Cert Weight Capacity (lbs)	5000	2500	1200	600
	Tank, gallons of Retardant (min)	700	300	100	75
	Examples:	Bell 214	Bell 204, 205, 212	Bell 206	Bell 47
Air Tankers	Minimum Capacity (gallons)	3000	1800	800	100
	Examples:	C-130 P-3 DC-7	DC-4 BP200 P2V	S-2	Thrush
Helitanker	• Fixed Tank • Air Tanker Board Certified • 1,100 Minimum Gallons Capacity				

FY99 INCIDENT COST PROJECTIONS

RESOURCE	COST/EACH	AMOUNT	COST/DAY	COST/WEEK
6 – CREW FIRE:				
Crews, Type 1	$1,300.00	1	$1,300.00	$37,100.00
Crews, Type 2	$1,850.00	5	$19,250.00	$134,750.00
Oil – Reg. Gov't	$450.00	12	$5,400.00	$37,800.00
Hel. B-206L **	$2,000.00	1	$2,000.00	$14,000.00
Hel. B-212 **	$5,000.00	1	$5,000.00	$35,000.00
10 – CREW FIRE:				
Crews, Type 1	$1,300.00	2	$10,400.00	$74,200.00
Crews, Type 2	$1,850.00	8	$30,800.00	$215,600.00
Oil – Reg. Gov't	$450.00	25	$11,250.00	$78,750.00
Hel. B-206L **	$2,000.00	2	$4,000.00	$28,000.00
Hel. B-212 **	$5,000.00	2	$10,000.00	$70,000.00
14 – CREW FIRE:				
Crews, Type 1	$1,300.00	2	$10,400.00	$74,200.00
Crews, Type 2	$1,850.00	12	$46,200.00	$323,400.00
Oil – Reg. Gov't	$450.00	35	$15,750.00	$110,250.00
Hel. B-206L **	$2,000.00	2	$4,000.00	$28,000.00
Hel. B-212 **	$5,000.00	2	$10,000.00	$70,000.00
20 – CREW FIRE:				
Crews, Type 1	$1,300.00	4	$21,200.00	$148,400.00
Crews, Type 2	$1,850.00	16	$61,600.00	$431,200.00
Oil – Reg. Gov't	$450.00	50	$22,500.00	$157,500.00
Hel. B-206L **	$2,000.00	2	$4,000.00	$28,000.00
Hel. B-212 **	$5,000.00	3	$15,000.00	$105,000.00

Crews
** Helicopters

Crew/day with subsistence.
Contract aircraft @ 5 hours/day average.

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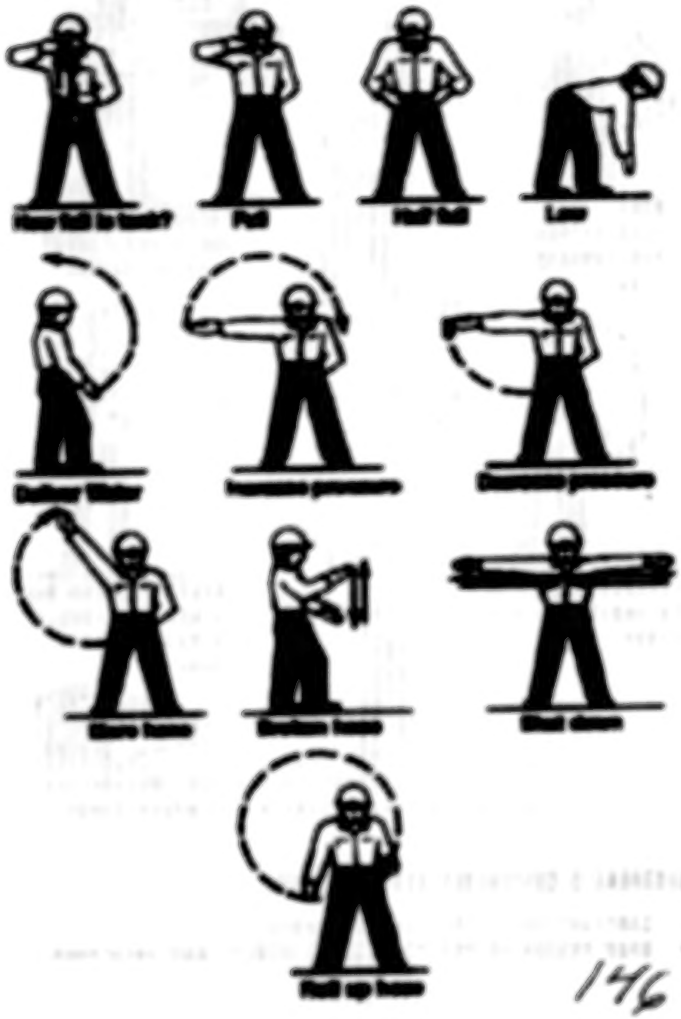
Line Production Rates for Initial Action in Chains per Person per Hour

Fire Behavior Fuel Model	Specific Conditions	Construction Rates in Chains per person per hour
1. Short Grass	Grass Tundra	4.0 1.0
2. Open Timber/ Grass understory	All	3.0
3. Tall Grass	All	0.7
4. Chaparral	Chaparral High Process	0.4 0.7
5. Brush	All	0.7
6. Dormant Brush/ Hardwood Slash	Black Spruce Others	0.7 1.0
7. Southern Rough	All	0.7
8. Closed Timber Litter	Conifers Hardwoods	2.0 10.0
9. Hardwood Litter	Conifers Hardwoods	2.0 8.0
10. Timber (Litter & Understory)	All	1.0
11. Logging Slash, Light	All	1.0
12. Logging Slash, Medium	All	1.0
13. Logging Slash, Heavy	All	0.4

Line Production Rates for Initial Action by Engine Crews in Chains per Crew per Hour

Fire Behavior Fuel Model	Specific Conditions	Chains per Crew Hour — Number of Persons in Crew				
		1	2	3	4	5+
1. Short Grass	Grass	6	12	24	35	40
	Tundra	2	8	15	24	30
2. Open Timber/ Grass understory	All	3	7	15	21	25
3. Tall Grass	All	2	5	10	14	16
4. Chaparral	Chaparral	2	3	8	15	20
	High Precruit	2	4	10	15	18
5. Brush	All	2	6	12	16	20
6. Dormant Brush/ Hardwood Slash	Black Spruce	3	6	10	16	20
	Others	3	6	12	16	20
7. Southern Rough	All	2	5	12	16	20
8. Closed Timber Litter	Conifers	3	8	15	20	24
	Hardwoods	10	30	40	50	60
9. Hardwood Litter	Conifers	3	7	12	18	22
	Hardwoods	8	25	40	50	60
10. Timber (Litter & Understory)	All	3	8	12	16	20
11. Logging Slash, Light	All	3	8	12	16	20
12. Logging Slash, Medium	All	3	5	10	16	20
13. Logging Slash, Heavy	All	2	4	8	11	20

Wildland Water Use Hand Signals



Dozer Use Hand Signals

SIGNALS GIVEN BY OPERATOR

- CAN'T SEE SPOTTER - Gun motor twice.
- WANT DOZER HELPER TO COME TO DOZER - Gun motor once.

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CHAINSAW TROUBLE SHOOTING

1. Gas (50:1 Stihl / 40:1 Husky)
2. Oil
3. On/Off Switch is turned ON
4. Spark plug has spark
5. Exhaust screen is clean
6. Air filter is clean
7. Jets are adjusted correctly:

   NEVER OVER TIGHTEN JETS

   Turn both jets to the right until "snug."

   Then, back to the left until desired setting.

   Stihl: high = ¾ turn, low = ¼ turn

8. Carburator is flooded:

   Tighten high jet until its snug.

   Pull starter cord until saw starts.

   Turn jet left to correct setting.

Purging Instructions:

1. Drain fuel tank.
2. Run saw until it stops.
3. Attempt restarting saw with choke on until saw fails to detonate.
4. Remove fuel tank cap and invert saw for 5 minutes.
5. Neutralize any residual fuel by pouring one table spoon of oil in fuel tank.
6. Circulate the oil by pulling the starter cord several times.
7. Replace cap.

CHAINSAW KIT

1. Saw
2. Bar, 1 extra
3. Chains, 2 extra
4. Sig Bottles, 1 oil & 2 gas
5. Dremar
6. Sprocket, spare
7. Air Filter, spare
8. Bar Nuts, 2 spare
9. Screach
10. File
11. "E-clip," spare
12. Star wrench
13. Screwdriver
14. Flat File
15. Screw, spare
16. Wedges, various sizes
17. Barring, spare
18. Spark Plug, spare
19. Felling Axe
20. Wiping rags
21. Bar Cover

Obtaining a saw kit from the Cache:
When requesting a saw from the Cache while on an assignment, make sure to request a complete saw kit if both a kit and a saw are needed and a saw if only a saw is needed.

Water Delivery Information

GPM for nozzles

Forester
- 3/16 tip: 14 gpm (50 psi nozzle pressure)
- 3/8 tip: 56 gpm (50 psi nozzle pressure)

Water Warrior
- One inch: 28 gpm (100 psi nozzle pressure)
- 1-1/2 inch: 60 gpm (100 psi nozzle pressure)

Maximum efficient flow
- One-inch hose: 30 gpm
- 1-1/2 inch hose: 100gpm

Useful Information

1. Test for flow (gpm) by time required to fill a 5gal. bucket (5 gal. in 15 sec. = 20 gpm)
2. Maximum vertical height for drafting = 12 feet (Mark 3 Pump)
3. Loss of max foot draft per 1000 feet elevation
4. Head pressure loss or gain: 5 psi per 10 feet elevation
5. Friction loss for 1 inch hose:
   - 10 gpm = 4 psi per 100 ft.
   - 20 gpm = 12 psi per 100 ft.
   - 30 gpm = 26 psi per 100 ft.
6. Friction loss for 1-1/2 inch hose:
   - 10 gpm = 1 psi per 100 ft.
   - 20 gpm = 2 psi per 100 ft.
   - 30 gpm = 4 psi per 100 ft.
   - 60 gpm = 17 psi per 100 ft.
7. Use check valve for pumping uphill to overcome back pressure at pump.
8. Avoid use of hard suction for tandem pumping. Not designed to withstand positive pressure.
9. Pump pressure = nozzle pressure + friction loss of hose/pipe +/- head pressure + appliance friction loss.
10. A double hose/pipe will reduce friction loss ¼ of a single hose/pipe.
11. Friction loss for a gated wye: 5 psi.
12. Use of two suction hoses on intake will increase net pump pressure.

Maximum horizontal distance pumping

Single Mark 3 pump. 1-1/2 inch hose. 50 psi nozzle pressure.
- 10 gpm = 40,000 ft.
- 20 gpm = 10,000 ft.
- 30 gpm = 4,000 ft.
- 60 gpm = 800 ft.

Maximum vertical distance pumping

Single Mark 3 pump. 1-1/2 inch hose. 50 psi nozzle pressure. (Friction loss for hose not included)
- 10 gpm = 400 ft.
- 20 gpm = 400 ft.
- 30 gpm = 350 ft.
- 60 gpm = 200 ft.

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PORTABLE PUMP OPERATING INSTRUCTIONS

FUEL

Use 40:1 mix (that's 3 gallons of gas/ ½ quart of oil)

Consumption: Mark III = 1 gal./ 1 hours
Float A Pump = 1 gal./ 4 hours
Shindaiwa = 1 gal./ 10 hours

Connect fuel use line with quick connect. Loosen lid on tank for venting.

Cautions:

1. Do not run engine at full speed until it is thoroughly warmed up (1 minute).
2. Do not run engine with pump disconnected.
3. Do not run pump dry.
4. Do not use suction hose without foot valve strainer.
5. Remove and drain pump after final use, and at night (if temps falls below freezing).

SETTING UP AND STARTING MARK III AND MARK 3A PUMPS

1. Connect fuel line to fuel can and pump as specified above.
2. Connect suction hose to the pump. Be sure to connect the foot valve to the male end of the suction hose. Make sure that the rubber gasket or washer is in place before attaching the female end to the pump. Tighten firmly with a spanner wrench. Put the foot valve inside the canvas basket in the pump kit, and/ or use rope or a float to the strainer to keep it from being too close to the water surface or resting of the bottom in the mud.
3. Attach wye valve to discharge side of the pump. Hand tighten only. Twist priming pump rain-out leg of the wye and hose on the other. Close the valve to the hose, leave primer rain-out leg of the wye and hose on the other. Close valve to the hose, leave the primer valve open. Stroke primer until water squirts out of the small hose, or until resistance is too great to keep at it. After priming, close valve to primer and open valve to hose.
4. Pull the decompression switch out until it comes to a "click" stop. (New pumps do not have decompression switches.)
5. Put the choke on START, if the engine is cold.
6. Move throttle to "START AND WARM UP" position.
7. Give starter rope several quick, steady pulls until engine starts or pops. Turn choke off immediately after engine makes any noise to prevent flooding on the next pull.
8. Put choke on RUN and pull engine over until it starts, usually 1 – 3 pulls.
9. Push decompression switch fully in as soon as engine starts.
10. Allow engine to warm up fully (last to the touch) before using hand throttle.

STOPPING A MARK III OR MARK 3A PUMP

1. Move throttle lever to "stop" position.
2. Let pump run for about 2 minutes in this position.
3. Press and hold stop switch until engine is fully stopped.

DAILY ENGINE INSPECTION

CAB & CHASSI

1. Oil
2. Coolant
3. Power Steering
4. Automatic Transmission Fluid
5. Fan Belts
6. Air Cleaners
7. Hoses
8. Leaks
9. Batteries
10. Fuel Tank Full
11. Hydraulic Oil
12. Parking Brake
13. Tires
14. Hubs & Lug Nuts
15. Undercarriage
16. Cabinet Locks
17. General Condition
18. Start Engine
19. Lights & Signals
20. Mirrors & Glass
21. Back-up Alarm
22. Gauges
23. Mobile Radio
24. Wipers & Washers
25. Horn
26. Seat Belts
27. Heater & AC
28. Log Book
29. Accident Forms
30. Fire Extinguisher
31. First Aid Kit
32. Reflector Set
33. Wheel Chocks
34. Jack & Lug Wrench
35. Equipment Package

PUMP PACKAGE

1. Water Tank Level
2. Foam Tank Level
3. Valves
4. Coolant
5. Oil Level
6. Fuel Tank Level
7. Air Cleaner
8. 5 Minute "Warm-up"
9. All Gauges
10. Override Switch
11. Line Reels
12. Primer
13. Foam Proportioner

REMINDERS

1. Be sure to check and start:
   - Chainsaw
   - Auxiliary Pump
2. Fuel cans are full and labeled correctly.
3. Check and operate winch.
4. Cell Phone.
5. All personal gear stowed on the Engine.
6. Dispatch has been notified of Engine manning and availability.

PERIODIC/ POST-FIRE INSPECTION

CAB & CHASSI

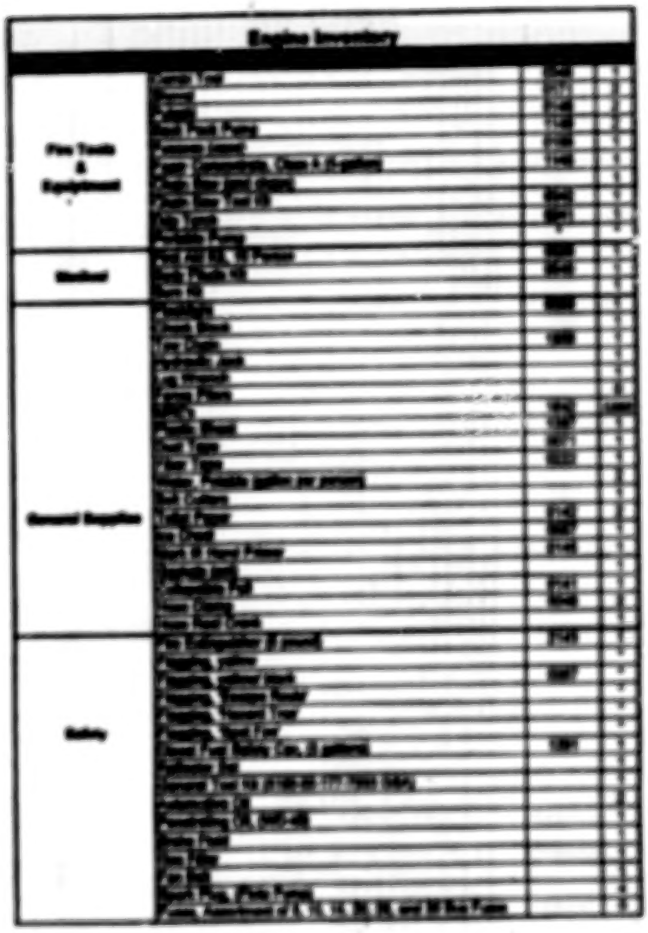
1. Differential Oil Level
2. Transfer Case Oil Level
3. Parking Brake
4. Manual Transmission Fluid
5. Check Equipment Package
6. Rocks Between The Duals
7. Tire Tread Wear
8. General Condition
   - Chassis
   - Utility Box

PUMP PACKAGE

1. Check Service Log For Oil And Filter
2. Check Pump Motor Mounts
3. Check Water Tank Mounts
4. Fuel Filter
5. Clean And Change Air Filter
6. General Appearance
7. Pump Performance Test
8. Lubricate Pump Head
9. Foam Proportioner

REMINDERS

1. When Was The Last LOP?
2. Do Tires Need Rotated?
3. If There Are Damages, Do You Have "E" Numbers?
4. Is The Log Book Up To Date?
5. Is The Service Log Up To Date?
6. If Repairs Are Needed, Have Appointments Been Made?
7. Is The Engine In The Same Condition That You Took It Out In Or Better?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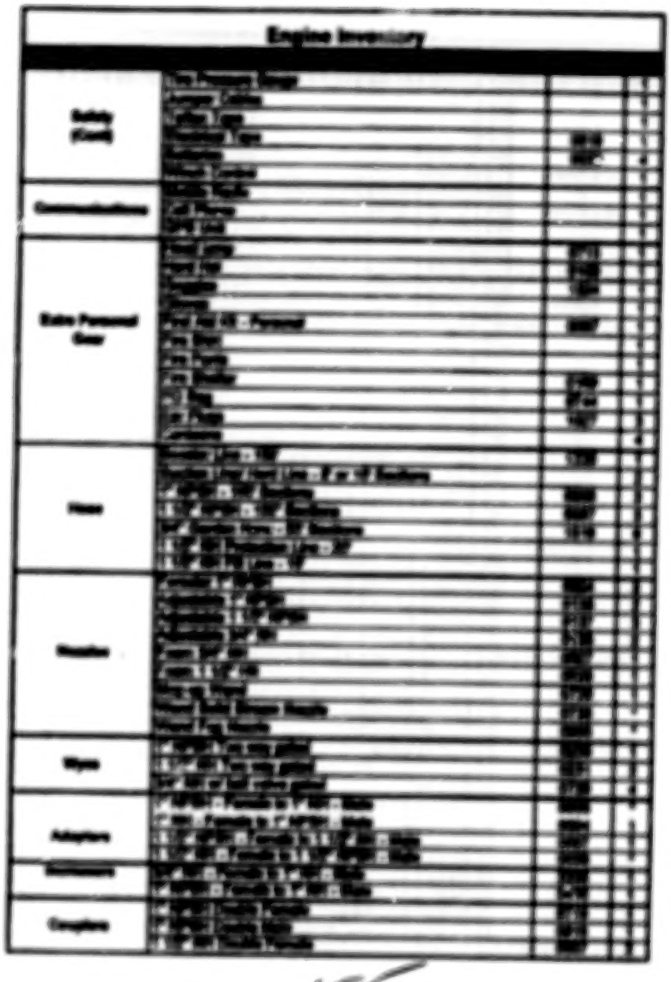
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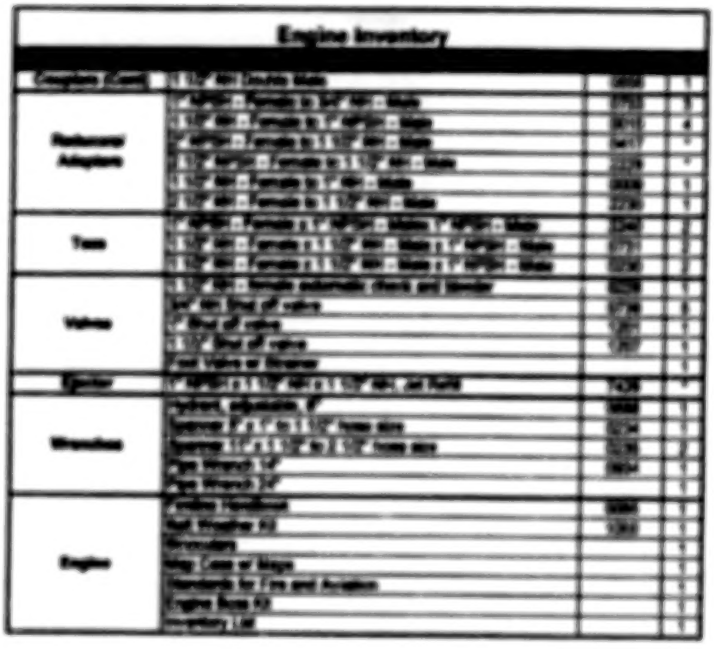
Engine Inventory

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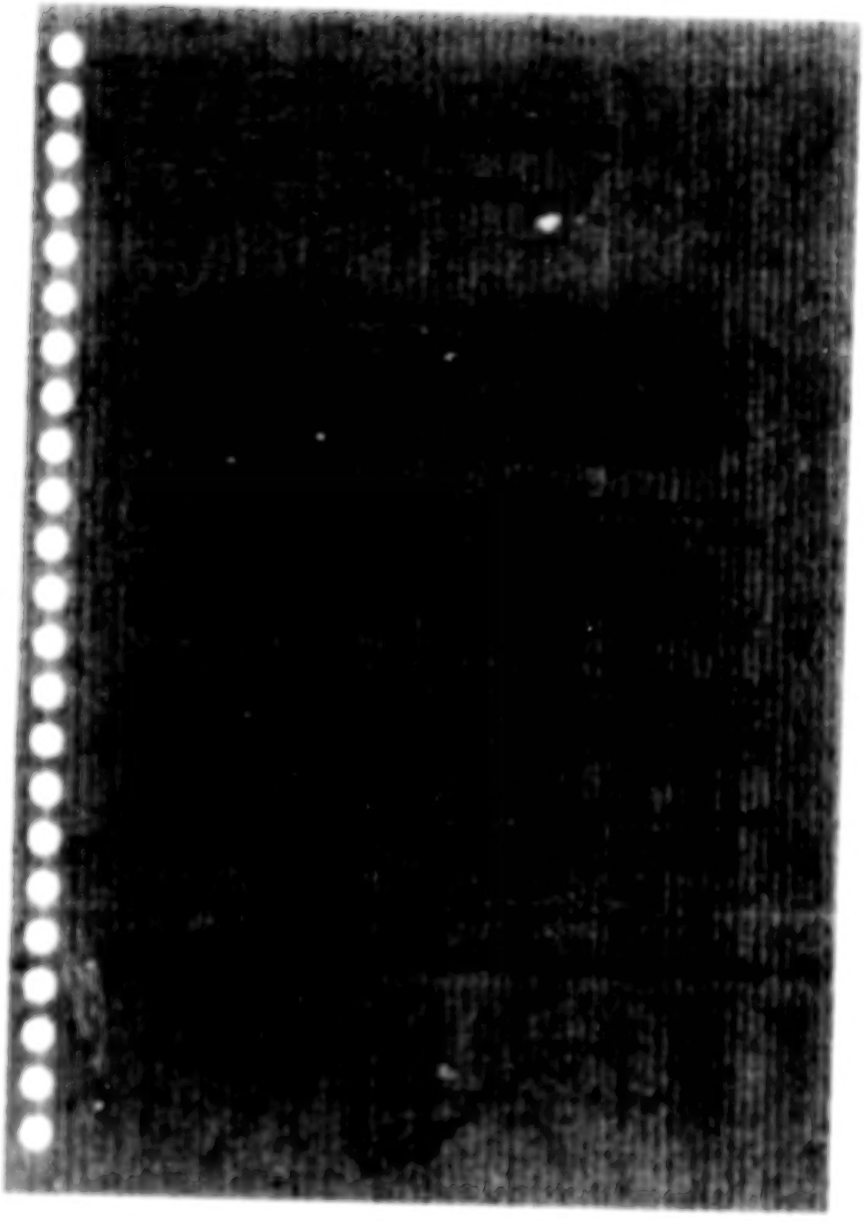

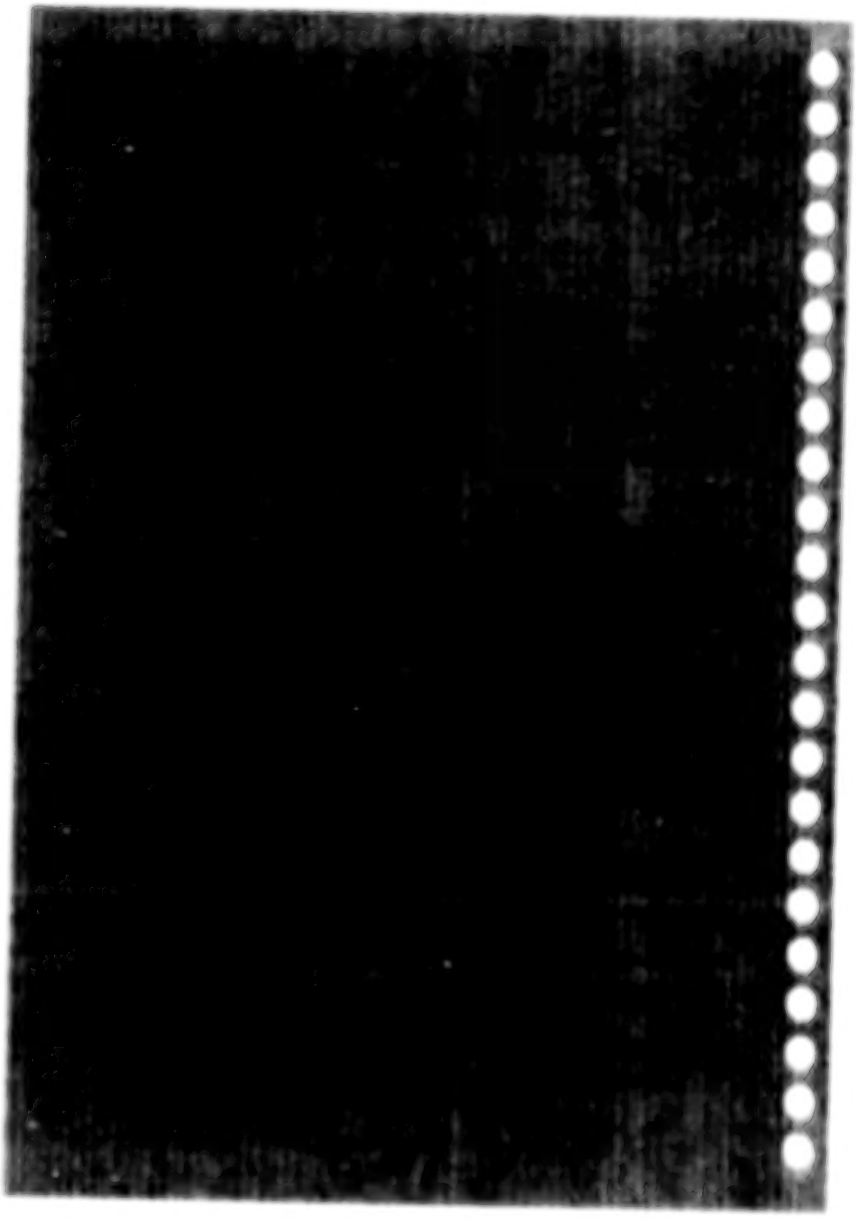

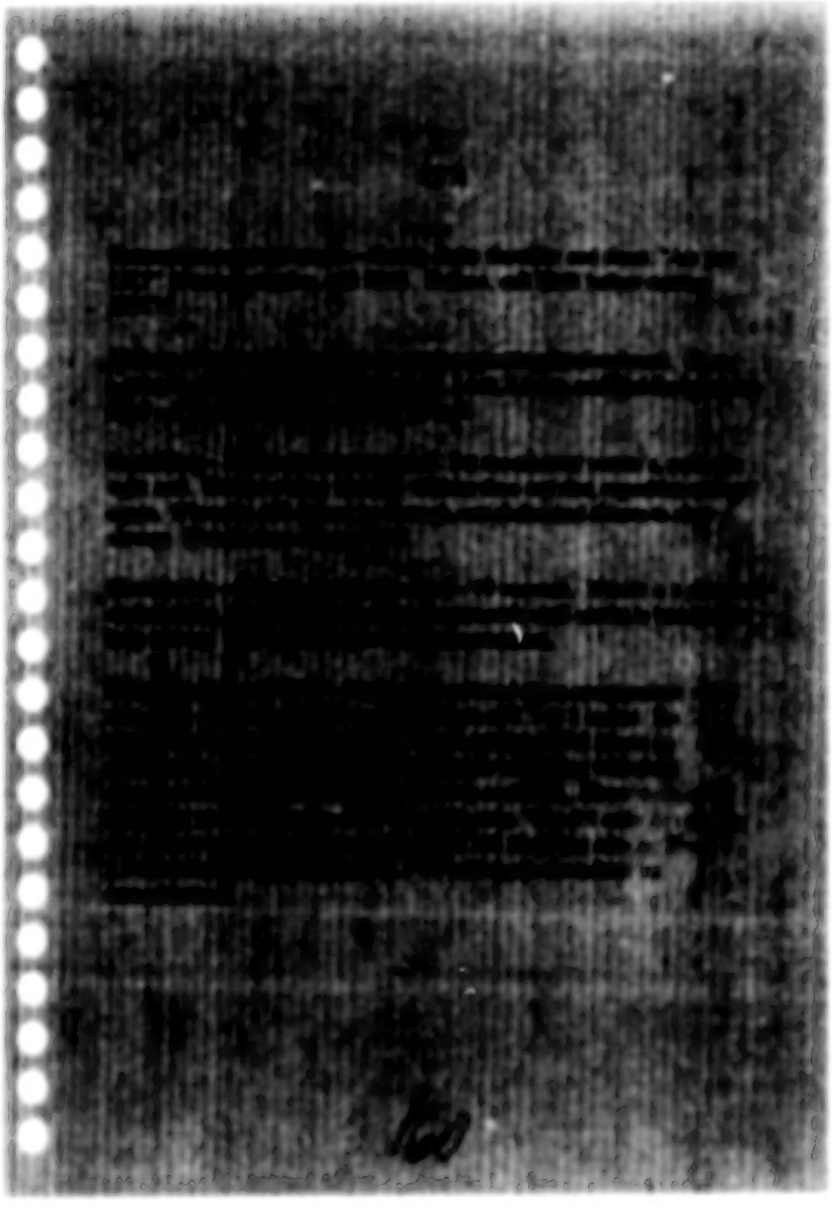

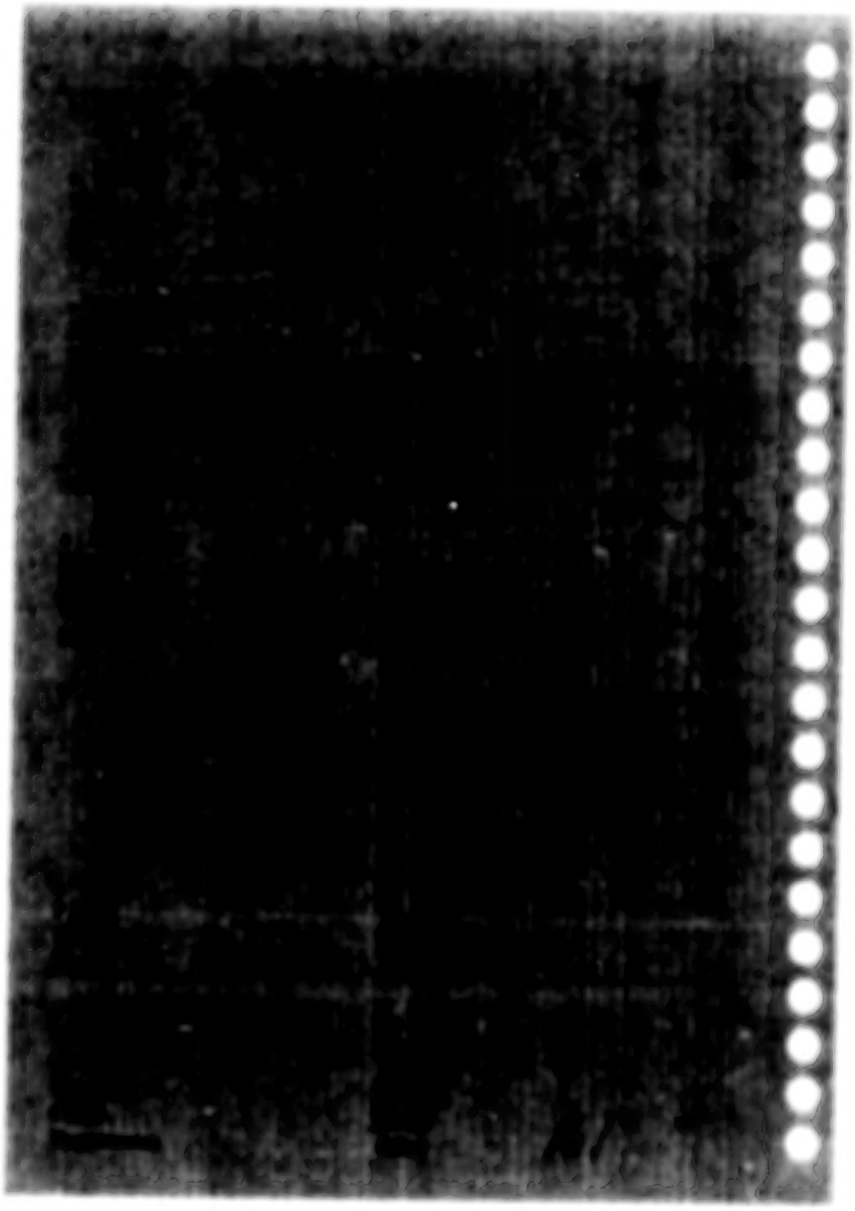

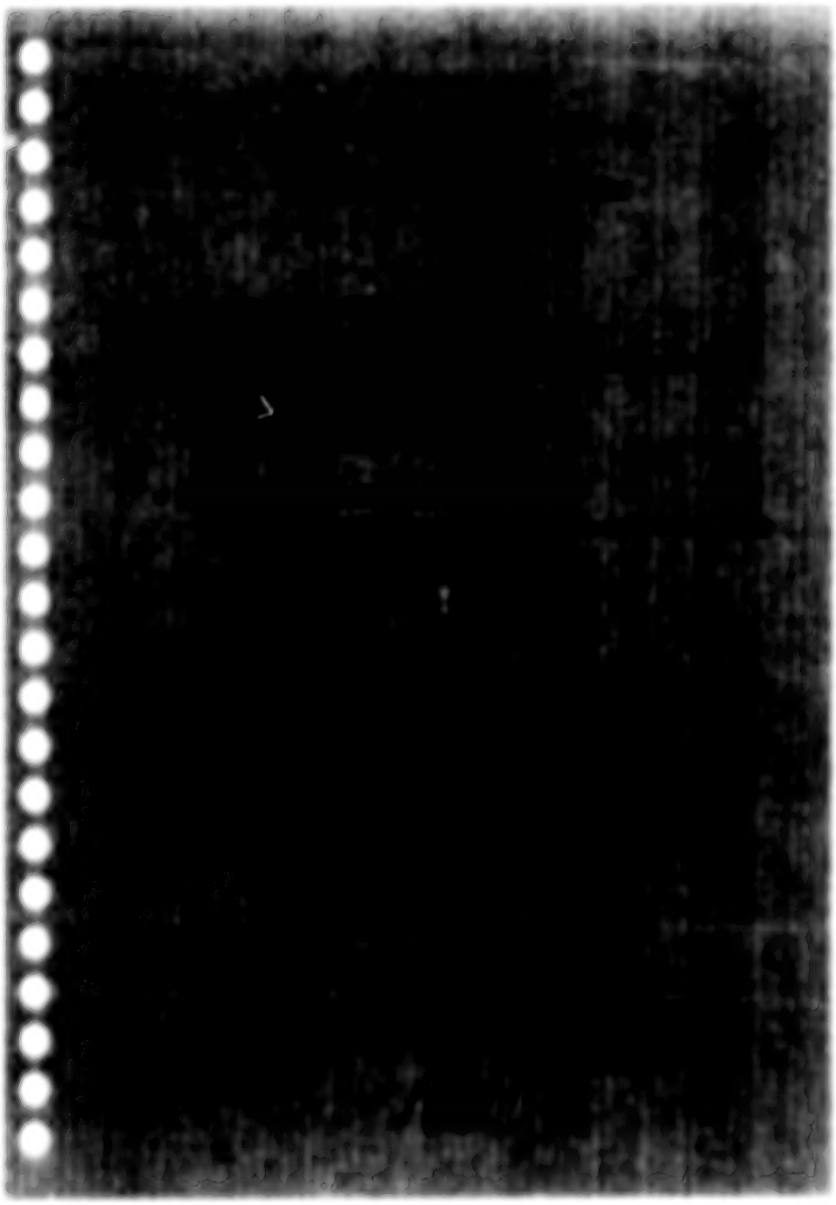

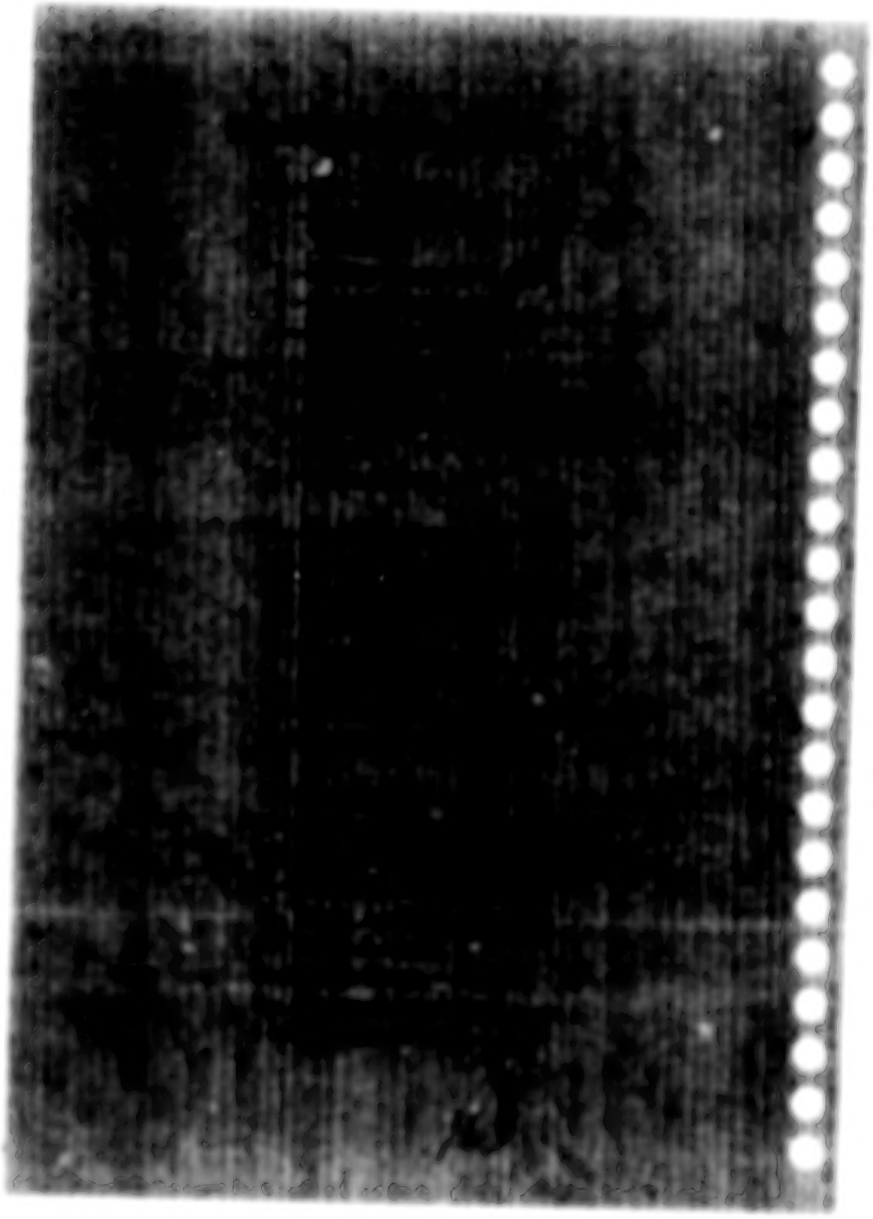

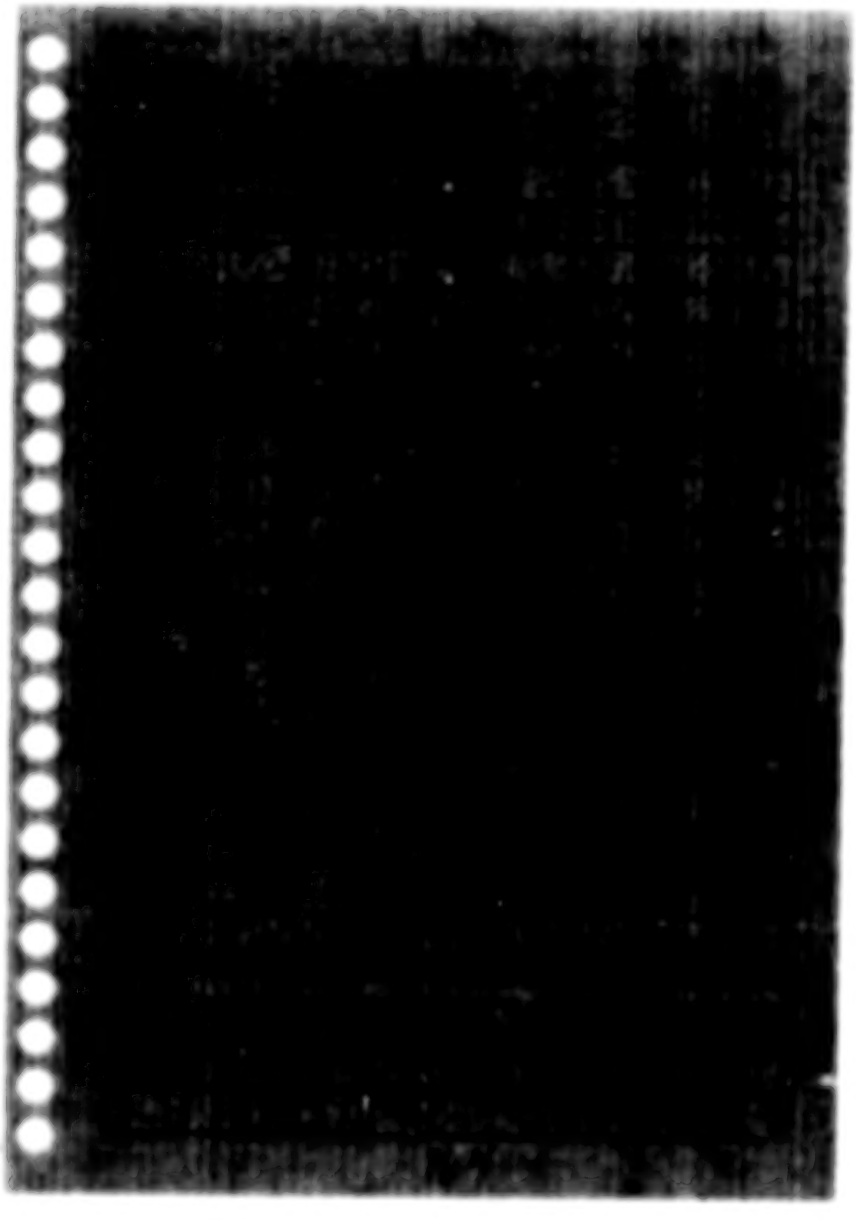

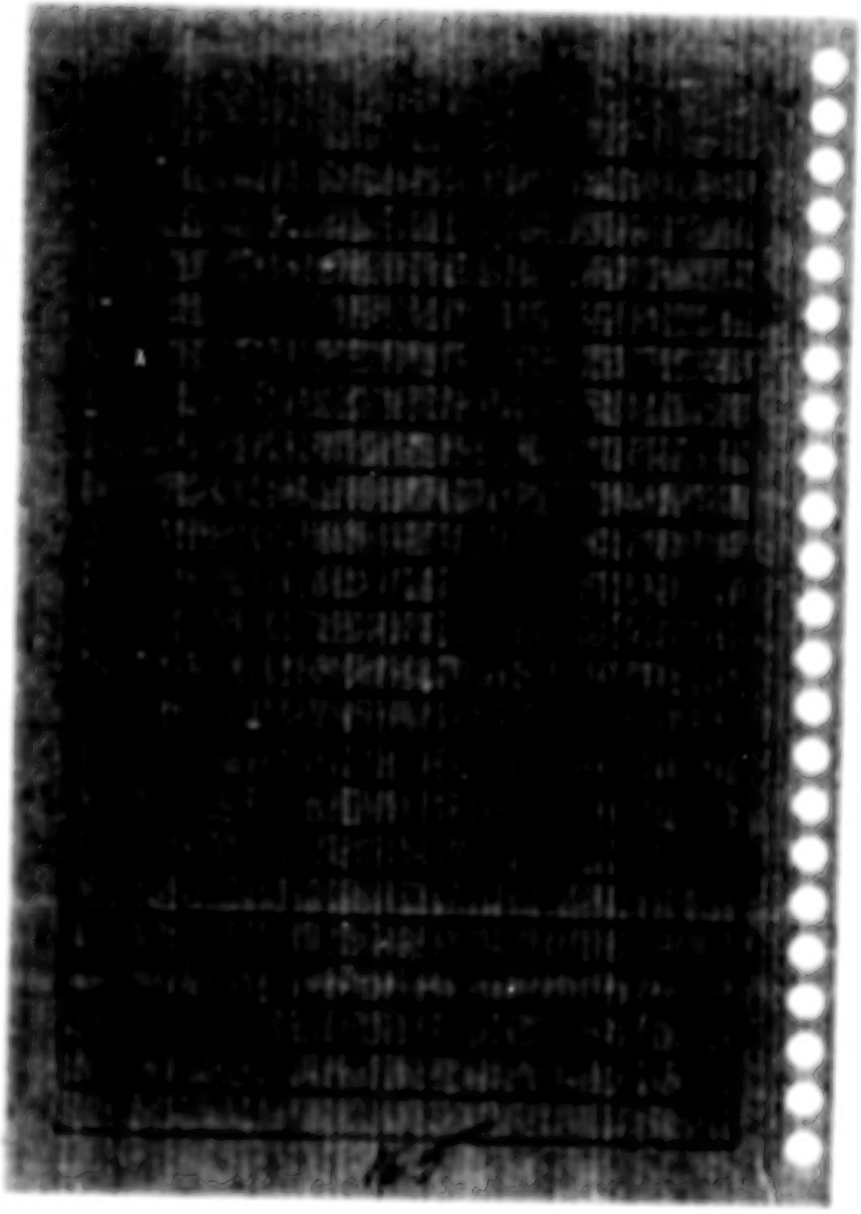

2003 FIRE RECORDS

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

2003 FIRE RECORDS

JOB CODE	WF RX	DATE	STATE CODE	SHRTS	MGMT TYPE	FUEL TYPE	FIRE SIZE	FIRE NAME/ FIRE NUMBER

2003 FIRE RECORDS

JOB CODE	WF RX	DATE	STATE CODE	SHIFTS	MGMT TYPE	FUEL TYPE	FIRE SIZE	FIRE NAME/ FIRE NUMBER

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2003 FIRE RECORDS

JOB CODE	WF RX	DATE	STATE CODE	SHIFTS	MGMT TYPE	FUEL TYPE	FIRE SIZE	FIRE NAME/ FIRE NUMBER

DATES TO REMEMBER

January

2003

Sunday	Monday	Tuesday
5	6	7
12	13	14
19	20	21
26	27	28

Wednesday	Thursday	Friday	Saturday
1	2	3	4
8	9	10	11
15	16	17	18
22	23	24	25
29	30	31	

February

2003

Sunday	Monday	Tuesday
2	3	4
9	10	11
16	17	18
23	24	25

Wednesday	Thursday	Friday	Saturday
			1
5	6	7	8
12	13	14	15
19	20	21	22
26	27	28	

March

2003

Sunday	Monday	Tuesday
2	3	4
9	10	11
16	17	18
23	24	25
30	31	

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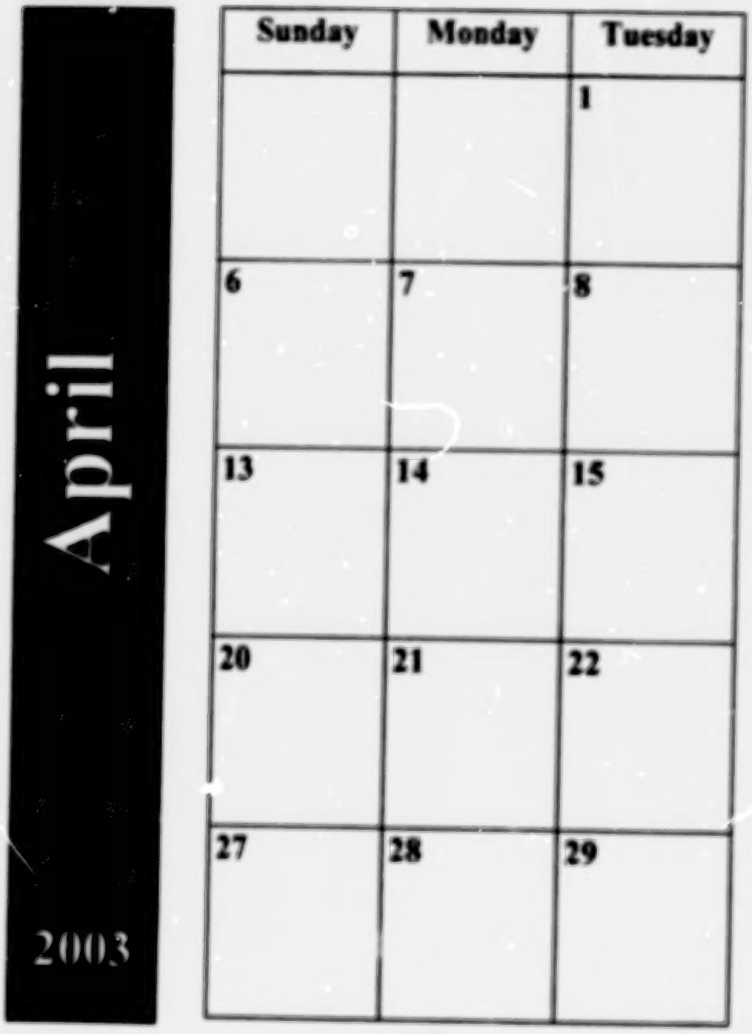
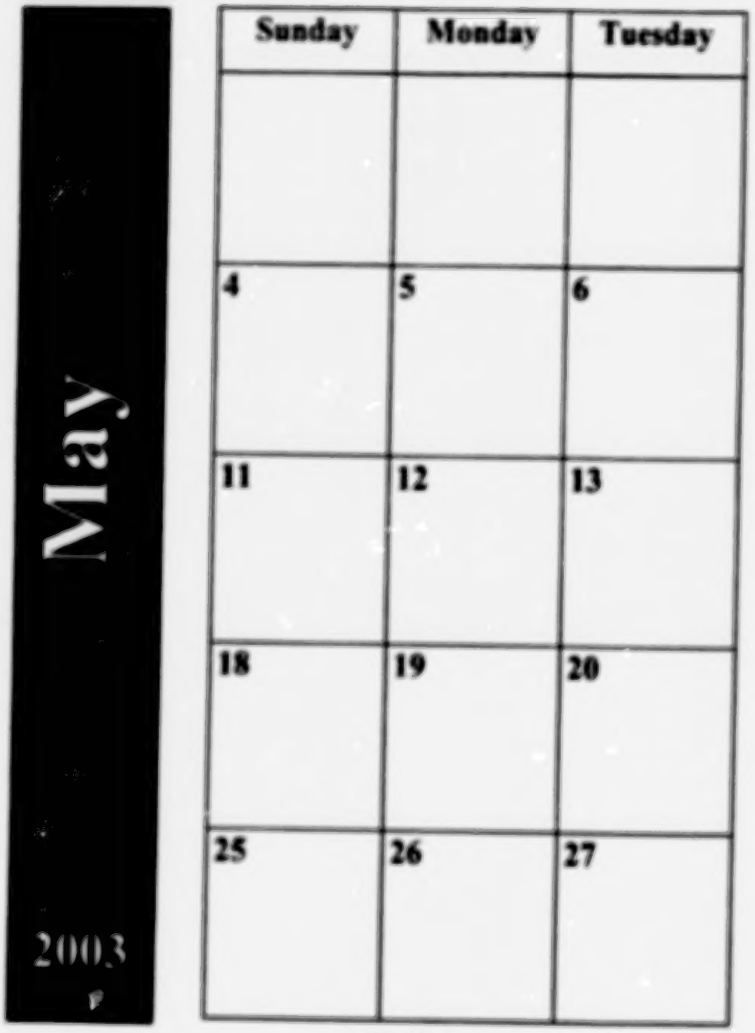
Wednesday	Thursday	Friday	Saturday
			1
5	6	7	8
12	13	14	15
19	20	21	22
26	27	28	29


April
2003
Sunday
Monday
Tuesday
1
6
7
8
13
14
15
20
21
22
27
28
29

Wednesday	Thursday	Friday	Saturday
2	3	4	5
9	10	11	12
16	17	18	19
23	24	25	26
30			


May
2003
Sunday
Monday
Tuesday
4
5
6
11
12
13
18
19
20
25
26
27

Wednesday	Thursday	Friday	Saturday
	1	2	3
7	8	9	10
14	15	16	17
21	22	23	24
28	29	30	31

June

2003

Sunday	Monday	Tuesday
1	2	3
8	9	10
15	16	17
22	23	24
29	30	

Wednesday	Thursday	Friday	Saturday
4	5	6	7
11	12	13	14
18	19	20	21
25	26	27	28

Sunday	Monday	Tuesday
		1
6	7	8
13	14	15
20	21	22
27	28	29

Wednesday	Thursday	Friday	Saturday
2	3	4	5
9	10	11	12
16	17	18	19
23	24	25	26
30	31		

August

2003

Sunday	Monday	Tuesday
3	4	5
10	11	12
17	18	19
24 / 31	25	26

Wednesday	Thursday	Friday	Saturday
		1	2
6	7	8	9
13	14	15	16
20	21	22	23
27	28	29	30

September

2003

Sunday	Monday	Tuesday
	1	2
7	8	9
14	15	16
21	22	23
28	29	20

Wednesday	Thursday	Friday	Saturday
3	4	5	6
10	11	12	13
17	18	19	20
24	25	26	27

October

2003

Sunday	Monday	Tuesday
5	6	7
12	13	14
19	20	21
26	27	28

Wednesday	Thursday	Friday	Saturday
1	2	3	4
8	9	10	11
15	16	17	18
22	23	24	25
29	30	31	

November

2003

Sunday	Monday	Tuesday
2	3	4
9	10	11
16	17	18
23 / 30	24	25

Wednesday	Thursday	Friday	Saturday
			1
5	6	7	8
12	13	14	15
19	20	21	22
26	27	28	29

December

2003

Sunday	Monday	Tuesday
	1	2
7	8	9
14	15	16
21	22	23
28	29	30

Wednesday	Thursday	Friday	Saturday
3	4	5	6
10	11	12	13
17	18	19	20
24	25	26	27
31			

January

2004

Sunday	Monday	Tuesday
4	5	6
11	12	13
18	19	20
25	26	27

Wednesday	Thursday	Friday	Saturday
	1	2	3
7	8	9	10
14	15	16	17
21	22	23	24
28	29	30	31

February

2004

Sunday	Monday	Tuesday
1	2	3
8	9	10
15	16	17
22	23	24

197

Wednesday	Thursday	Friday	Saturday
4	5	6	7
11	12	13	14
18	19	20	21
25	26	27	28

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March

2004

Sunday	Monday	Tuesday
1	2	3
8	9	10
15	16	17
22	23	24
29	30	31

Wednesday	Thursday	Friday	Saturday
4	5	6	7
11	12	13	14
18	19	20	21
25	26	27	28

200

Sunday	Monday	Tuesday
5	6	7
12	13	14
19	20	21
26	27	28

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Wednesday	Thursday	Friday	Saturday
1	2	3	4
8	9	10	11
15	16	17	18
22	23	24	25
29	30		

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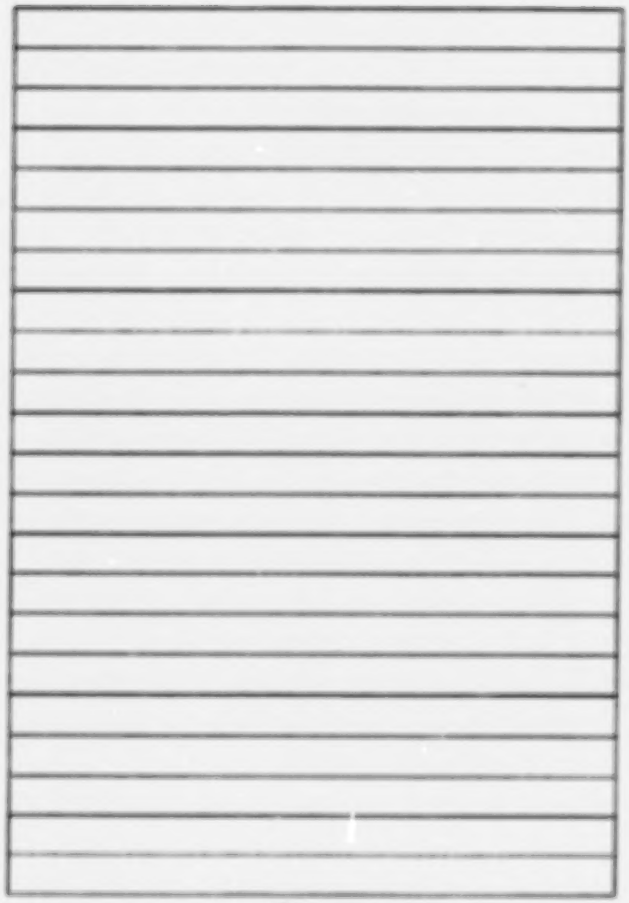

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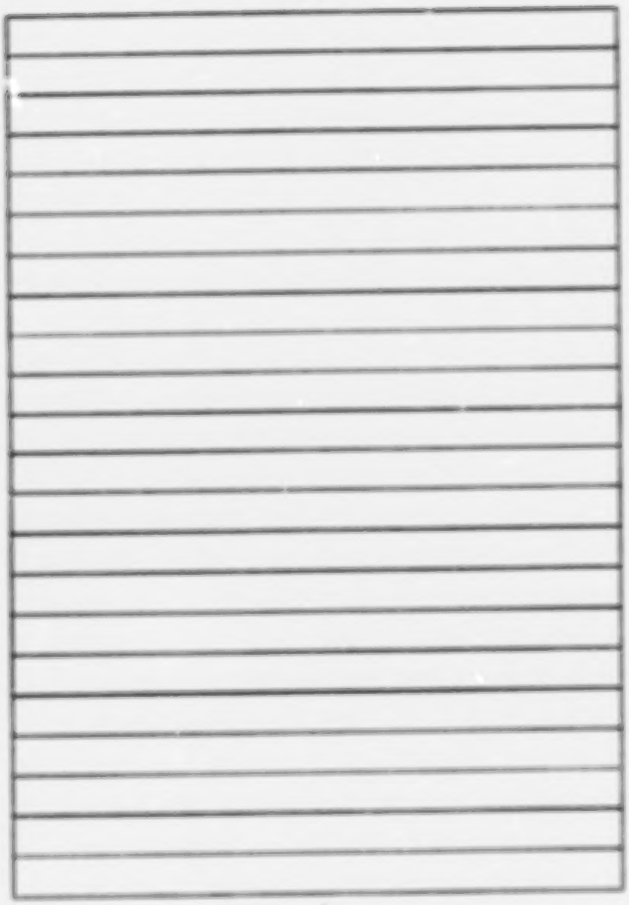

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11-20-03